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EDINBURGH

MEDICAL JOURNAL.

Vol. 39

VOL. XXXIX.—PART I.

JULY (TO DECEMBER) 1893 — Jne 1894

EDINBURGH:
OLIVER AND BOYD, TWEEDDALE COURT.
LONDON: SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED.

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EDINBURGH

MEDICAL JOURNAL.

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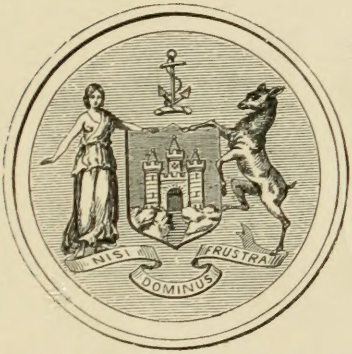

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ALPHABETICAL LIST OF THE CONTRIBUTORS OF ORIGINAL ARTICLES.

Affleck, J. O., M.D., Lecturer on Practice of Physic and on Clinical Medicine, Edinburgh Medical School; Physician to the Royal Infirmary, Edinburgh.

Aitken, David W., M.B., C.M.

Annandale, Thomas, M.D., F.R.C.S. Eng. & Ed., Regius Professor of Clinical Surgery, University of Edinburgh.

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Ballantyne, J. W., M.D., F.R.C.P. Ed., Lecturer on Midwifery, Medical College for Women; Lecturer on Diseases of Infancy and Childhood, Minto House, Edinburgh; Physician for Diseases of Women, Western Dispensary.

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Bramwell, Byrom, M.D., F.R.C.P. Ed., Assistant Physician to the Edinburgh Royal Infirmary; Lecturer on the Principles and Practice of Medicine, and on Practical Medicine and Medical Diagnosis, School of Medicine, Edinburgh.

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Davison, James T. R., M.D., formerly Resident Physician to the Edinburgh Royal Infirmary.

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Elkins, Frank Ashby, M.B., Senior Assistant Physician, Royal Edinburgh Asylum.

Felkin, R. W., M.D.

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SIMPSON, ALEXANDER RUSSELL, M.D., Professor of Midwifery and the Diseases of Women and Children in the University of Edinburgh.

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TUKE, JOHN BATTY, M.D., F.R.C.P. Ed.

WEBSTER, J. C., M.D., F.R.C.P.E., Assistant to the Professor of Midwifery and Diseases of Women in the University of Edinburgh.

WHITAKER, J. RYLAND, B.A., M.B. (Lond.), L.R.C.P. & L.R.C.S. (Edin.), Lecturer on Anatomy, School of Medicine, Edinburgh.

WYLLIE, JOHN, M.D., F.R.C.P.E., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh; Lecturer on Medicine in the Edinburgh School.

THE

EDINBURGH MEDICAL JOURNAL.

Part First.

ORIGINAL COMMUNICATIONS.

I.—THE DISORDERS OF SPEECH.

By JOHN WYLLIE, M.D., F.R.C.P. Ed., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh; Lecturer on Medicine in the Edinburgh School.

(*Continued from page* 1094 of vol. xxxviii.)

APHASIA: — PHYSIOLOGICAL PREFACE; WITH NOTES ON THE LEADING FEATURES OF APHASIA, AND ON THE HISTORY AND LITERATURE OF THE SUBJECT—*Continued.*

IF I were now writing a history of the literature of Aphasia, it would here be necessary for me to give an account of the great number of admirable papers on the subject that were issued during the ten or fifteen years following the publication, in 1861, of Broca's original cases. It would be necessary for me to describe, for example, the stores of accurately observed cases accumulated by Trousseau[1] in France, and by Hughlings-Jackson[2] in this country. But for detailed historical information I must refer the reader to Kussmaul's treatise, or to the learned and valuable work of Sir Frederic Bateman of Norwich.[3] I shall here only, for the reader's convenience, make the briefest note of a few of the leading papers on the subject published in this country during the period referred to.

In 1864, soon after the appearance of the treatise by Dr Hughlings-Jackson above alluded to, Dr James Russell of Birmingham published a series of valuable papers on Aphasia in the *British Medical Journal*. In one of those papers (p. 239) he draws a clear distinction between a loss of speech due to a mechanical difficulty in articulation and a loss of speech due to loss of memory of words. [According to Spamer and Lichtheim,[1] Dr Russell was the first to make this distinction; but it had already been made, many years previously, by Lordat,[2] who clearly distinguishes between "*Amnésie verbale*," loss of memory of words, and "*Asynergie verbale*," loss of power of pronouncing words that are remembered; and who uses, moreover, the term "*Paramnésie verbale*" for that emission of *wrong* words which we now term Paraphasia.] In 1866, Dr Sanders recorded an important case of Aphasia in the *Edinburgh Medical Journal*. In commenting on the varieties of aphasia, he invented anew, for aphasia due to loss of memory of words, the adjective amnesic, using this word in the same sense as Lordat had used it; and, for the condition that Lordat had termed *Asynergie verbale*, he invented the term Ataxic Aphasia. In the following year, 1867, Professor Gairdner read a paper on Aphasia to the Philosophical Society of Glasgow.[3] In this thoughtful and instructive treatise, the author distinguishes between the Ideation and the Innervation of language, and records a number of interesting cases. In 1887, Dr Wm. Ogle published a paper on "Aphasia and Agraphia" in the *St George's Hospital Reports*, vol. ii., p. 83, in which, like the above-mentioned writers, he distinguishes between two forms of Aphasia, suggesting for them the adjectives "Amnemonic" and "Atactic." He is the first to propose the use of the term "Agraphia" for the loss of the power of writing that is often found associated with other forms of Aphasia. The paper includes the records of a number of valuable cases. In 1869, Dr Bastian published in the *Medico-Chirurgical Review*, vol. xliii., pp. 299 and 470, articles on "The Various Forms of Loss of Speech in Cerebral Disease;" in the course of which he clearly shows the possibility of Sensory Aphasia, his main thesis being that "Words are revived in the cerebral hemisphere as remembered sounds." In 1872, Dr Broadbent published in the *Medico-Chirurgical Transactions*, vol. lv., p. 144, a paper on the "Cerebral Mechanism of Speech and Thought," in which he puts upon record one of the first published cases of what we now term "Word-Blindness," as well as a number of other valuable cases. "In this contribution," Dr Ross remarks, "as well as in all his subsequent writings, Dr Broadbent sees clearly that the disorders of speech which had hitherto been described under the name of Amnesic Aphasia, are caused by lesion in the area of the posterior branches of the Sylvian artery, and that they result from injury of the sensory mechanism."[4]

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[1] *Clinique Médicale*, chap. lxii.

[2] *Lond. Hosp. Clin. Lectures and Reports*, 1864, p. 337.

[3] *On Aphasia, and the Localization of the Faculty of Language*, 2nd ed., 1890.

Thus, even from such a brief summary as the foregoing, it will be seen that, in this country, before the publication of Wernicke's paper, the various forms of Aphasia, sensory and motor, were already gradually being differentiated and recognised. And it would not be difficult to show that similar progress was being made in other countries.

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[1] *Brain*, 1884, p. 471.

[2] *Analyse de la Parole*, 1843.

[3] See *Proceedings of the Glasgow Philosophical Society*, 1865–1868, p. 87.

[4] Dr Ross *On Aphasia*, 1887, p. 114.

Further, we must not omit to note, that, at this period, a new era in Cerebral Physiology was begun by experiments in electrical stimulation upon the brains of living animals. The era opened with the experiments of Fritsch and Hitzig in 1870, and those of Ferrier in 1873. By this new method of observation, a precision was soon given to the science of Cerebral Physiology that it had never before possessed.

Wernicke published his important treatise[1] in 1874. In it he records several cases of "Sensory Aphasia" that presented the characteristic symptoms now known as Word-Deafness and Word-Blindness. He carefully describes the morbid appearances, and the locality of the lesion, as displayed in one of the cases upon which an autopsy had been made. More clearly and precisely than any previous writer, he describes the differences between Sensory and Motor Aphasia. He also describes the variety of aphasia that results from lesion of the white conducting fibres connecting the sensory with the motor speech-centre. He thus puts the subject of Sensory Aphasia upon a much firmer basis than it had hitherto occupied. Wernicke's name, therefore, will probably always be associated, in a special manner, with the elucidation of Sensory Aphasia.

In 1877, Kussmaul published his great and comprehensive treatise on the "Disturbances of Speech."[2] He adopted the conclusions of Wernicke as to Sensory Aphasia, and illustrated the subject by quoting records of additional cases. He also distinguished, more precisely than Wernicke had done, the two forms of sensory aphasia; inventing the term "Word-Blindness" for the form in which the patient, though not blind, is unable to read visible words, and the term "Word-Deafness" for the form in which the patient, though not deaf, can no longer understand words that are spoken to him.

Thus four primary or elementary forms of aphasia came to be generally recognised—two motor forms, and two sensory;—each of the four being due to disablement of a particular centre in the cortex,—a disablement involving an obliteration, complete or partial, of the store of memories or images that have been therein stored. The two Motor forms are—(1), Aphemia (Motor Aphasia), implying the obliteration of the motor memories of oral speech; and (2), Agraphia, implying the obliteration of the motor memories of written speech. The two Sensory varieties are Word-Deafness and Word-Blindness, which imply the obliteration of sensory speech-memories, auditory and visual respectively. The cortical centres involved in all four varieties are situated in the cortex of only one, and the same, hemisphere of the brain. What modification of this classification, and what additions to it, have been suggested by recent observations, we shall have to consider in future papers.

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[1] *Der Aphasische Symptomencomplex*, 1874.

[2] Ziemssen's *Cycl. of Pract. Med.*, Amer. edition, vol. xiv.

The Nature of the Sounds that constitute Speech; and the Grades of Coördination employed in their production.

In the first paper on this series (*Edin. Med. Journ.*, Oct. 1891), I tried to illustrate, in a simple way, the composite nature of speech-sounds, by likening the two mechanisms that produce them to the two hands of a violinist: the Vocal Mechanism being compared to the bow-hand, and the Oral Articulative Mechanism to the string-hand. That comparison, however, may now be discarded, since, for our present purposes, it will be more convenient for us to look at the speech mechanisms as they are actually constructed. All we have to do in this respect is to realize that the executive organs of the two mechanisms are placed at the upper end of the air-passage, and that one is above the other,—that of the oral articulative mechanism being above, and that of the vocal mechanism below. We should also make note of the fact that below the larynx there is a third mechanism, the Respiratory, which furnishes, by expiratory effort, the blast of air without which no speech-sounds could be produced, either at the larynx or in the oral cavity. Thus three mechanisms co-operate in producing the sounds of speech. But, as the sounds are produced at the two first,—the third only supplying the necessary air,—we may pass over the third very shortly. We need only note about it: (1), That the expiratory pressure of air is furnished continuously for each clause or sentence; (2), that it is made to vary in strength according to the requirements of emphasis and emotional expression; and (3), that as yet the cortical centre in the brain from which the expiratory effort for speech is innervated has not been definitely localized.

Confining our attention, then, to the Laryngeal and the Oral Articulative Mechanisms, we find that each mechanism is capable of being called into action quite independently of the other; although for the purposes of speech the two must be employed together. Thus, with the Larynx, we can hum a tune without words, the oral articulative mechanism being meanwhile quite passive; and, with the Oral Articulative Mechanism, we can cause the tongue, lips, etc., to go through all the movements necessary for the articulation of a sentence, without producing any audible speech, —if, meanwhile, the glottis is kept either widely open, so that passing air will produce no laryngeal sound, or firmly closed (as in straining), so that air will not be allowed to pass at all. These points have been discussed at some length in the second paper

(*Edin. Med. Journ.*, Nov. 1891). As each of the mechanisms, Vocal and Oral Articulative, is thus so capable of displaying activities of its own independently of the other, it is not surprising to find, from the latest experimental researches upon animals, that each mechanism has probably its own separate sub-centre in the brain; and that the two cortical sub-centres, though they may lie in juxtaposition, and overlap each other at their margins, are yet probably distinct, as the corresponding centres are in animals. If they are so, electrical stimulation of the one sub-centre would, as in animals, cause adduction of the vocal cords, and the same stimulation applied to the other would cause movements of the lips and tongue; the movements in both cases being bilateral, though the stimulus be applied only upon one side of the brain.

The accomplishment of articulate speech is acquired by educating the two sub-centres to act together, in perfect coördination with one another. By what nervous arrangements, in the minute structure of the cortex, the two sub-centres are thus brought to act in coördination, we are as yet, I take it, in almost complete ignorance. But if we analyze the sounds, and see in what manner they are combined to form words, the study of the sounds will help us to understand the action of the cortical centres. Fortunately this analysis was made for us, to a great extent, thousands of years ago, by the inventors of the Ordinary Alphabet. In constructing a Physiological Alphabet, we merely try to give a representation of the sounds that is truer to Nature than that of the ordinary alphabet; removing the corruptions that have crept into the latter in the course of long use, and correcting the mistakes that seem originally to have been made in the framing of it.

Turning, then, again for a moment to the Physiological Alphabet, I think we may say that the sounds represented by its letter-symbols constitute the *Sound-Units* of speech; and that all our speech is constructed by the arrangement of these sound-units into the *Sequences* that we call syllables, words, and phrases. The phonograph, faithfully reproducing speech, is able to do so because words previously spoken into it have made on its revolving cylinder impressions of the vibrations of their units or letter-sounds. The phonograph reproduces these vibrations, sounding unit after unit, and marking the breaks in continuity that occur between syllables, words, and sentences. When a word is spoken, the units composing it are not struck off all at once, like a chord of music on the piano; they are played off in sequence, like a musical phrase, note after note.

But the unit, or letter-sound, is a composite thing, requiring, in the case of the vowels, and also in that of the greater number of the consonants, the simultaneous action of both mechanisms; and involving in each mechanism the coördinate action of many muscles. There is thus not only coördination of the one mechanism with the other, but also coördination of the several muscular movements in each mechanism with one another. Further, in speech, over and above the two forms of coördination thus exhibited in the formation of the sound-units, there is a third form, exhibited in the arrangement of the units into words and phrases. This we may call, if the phrase is allowable, the Coördination of Sequence. These distinctions have, I think, hitherto been too much neglected. In order that the reader may see their real importance, let me here pause for a moment, to recall to his mind the leading speech-disorders that have already been considered, and to see how they are each related to the two Mechanisms and the three Forms of Coördination.

In brief, then, it may be repeated—

1. That Stammering is due to a fault in the coördination of the one mechanism with the other.

2. That in Hysterical Aphonia there is functional paresis of the vocal mechanism only.

3. That in Hysterical Mutism there is functional paralysis,—in most cases, of the vocal mechanism only; in some, probably, of the oral articulative mechanism only; and in a few, probably, of both mechanisms.

4. That in Lalling we have—(*a.*) In bad cases, a "baby speech," in which all three forms of coördination are so defective, from want of education, that words are truncated, scamped, and slurred, so as to be almost or altogether unintelligible; (*b.*) In slight cases, a lingering defect (from imperfect education) in the internal coördination of the oral articulative mechanism, which displays itself in the imperfect pronunciation of certain difficult letter-sounds, such as **r** or **l**, or **k** or **g**.

5. That in Slurring we have an impairment or degeneration in the internal coördination of the oral articulative mechanism, which results in the slovenly articulation of the more difficult of the single letter-sounds, and of their combinations; so that, in some respects, articulation shows a retrogression towards the lalling articulation of children.

6. That in the Syllable-Stumbling of general paralysis we have not only a stumbling repetition of syllables, but also a distinct disorder in the *Coördination of Sequence*, displaying itself in the occasional placing of units, and even of whole syllables, in wrong places.

The two coördinations involved in the production of the units or letter-sounds, and the one concerned with their arrangement—which last I have called the "co-ordination of sequence,"—are alike rendered possible by the formation of sensory and motor memories, imprinted within the centres in the process of their education. It is these memories of "associated sounds and movements" that go to form the word-images or pictures of which so much has already been said.

Now, aphasia consists in the obliteration of these memories.

Sometimes the obliteration is complete, sometimes only partial. In the slighter cases, only words of certain particular kinds are forgotten, such as proper names, and the names of particular objects. Other words are remembered, and may be pronounced with perfect articulation. Therefore, in these slighter cases, it is only the coördination of sequence that is materially affected. Certain particular sequences or words, not very deeply imprinted, have been wiped out from the memory of the enfeebled centre. In many severe cases, on the other hand, there is complete obliteration of all word-pictures (memories of sequence); and, along with this, there may be an obliteration, equally complete, of the memories of how to produce the units or letter-sounds. In such severe cases, the patient is not only unable to articulate the simplest words, such as *Papa* or *Mama*, when asked to do so; he is even unable to pronounce properly the letter-sounds of single vowels or consonants. The memories of the Units have, in such cases, been wiped out, along with the memories of their Sequences.

It is wonderful to think what a wealth of memories of the sequences of these sound-units must be stored up in the speech-centres of every educated man; or, to put it in another way, what a wealth of words and phrases lie latent in his speech-centres, ready to be revived upon occasions calling for them. His thoughts clothe themselves in these words and phrases; and the wardrobe is so well furnished that the same thought finds in it a choice of garments, and is enabled to select that which appears to be most appropriate for the expression, not only of the intellectual meaning, but also of the emotional colour or feeling that is associated with it. The very tones of the voice are also, as we have seen, made to contribute their quota to the expressiveness of spoken language.

Professor Bain has remarked upon the adhesiveness of thoughts and of words, in virtue of which they link themselves to each other, thought to thought, and word to word, in chains or trains. The property is exhibited, not only by words, but also by the sound-units of which words are composed. It is exhibited even more strongly in the linking together of the units to form syllables and words, than in the linking of words into familiar phrases. It is the "Coördination of Sequence." How securely it can link word to word, we may realize when we repeat from memory a verse of poetry that has been long familiar to us. Perhaps it is owing to this adhesiveness of words, that he who is a perfect master of several languages does not, in conversation, mix up the words of one language with those of another. Some time ago I had the pleasure of conversing with a physician of note, who, born in Scotland, has lived in France since early boyhood, and now practises there. He is equally master of French and English. I asked him which of the two languages he preferred to think in. He told me he sometimes thought in the one and sometimes in the other; he had no preference, and usually found himself thinking in the language of the last person he had been conversing with. I asked him if he ever, in thought or in speech, mixed up the two languages, more or less. He said, Never; they always kept themselves distinct from each other in his mind.

Here let me add, in concluding this part of the subject, that although, for simplicity's sake, I have, in treating of the grades of coördination in the formation of letters, words, and phrases, made reference specially to the Motor Speech-centre, it must not be forgotten that the very same grades must be represented, in like manner, in the auditory speech-centre. Each motor image has its equivalent sensory image; and, as we have seen, the two that form the Primary Couple are welded together in the consciousness into one, so as to form what we have called the primary Word-Percept. In constitution they must of necessity be closely equivalent to each other.

Depth of Imprintation of Speech-Memories in the Speech-Centres; Overflow of Speech-Education into the corresponding Convolutions of the opposite Hemisphere; Recurring Utterances.

Depth of Imprintation.—It is a remarkable fact that the various classes of words are not all imprinted, if we may so express it, in the memories of the speech-centres, with equal depth and permanency. Thus, notoriously, Nouns form the class of words whose memories are the least firmly established, and therefore the most easily obliterated. Further, it is known that the memory of a noun will be lost more easily in proportion as the idea represented by it is special or concrete in character. Proper names being, above all other nouns, representative of special individuality, are the most easily obliterated of all; but names of other concrete things, such as a *watch*, a *chain*, or a *handkerchief*, are also easily obliterated. Abstract nouns and general terms, on the other hand, such as *time*, *thing*, *day*, *night*, are retained comparatively well. In aphasia, Nouns of this latter class are lost to any extent only in cases in which the names of concrete things are lost still more. In such cases, the less common varieties of verb and of the other parts of speech have also generally suffered more or less; so that speech is fragmentary, and requires to be eked out by pantomime. In very severe aphasia, speech may be altogether lost. But even in severe cases a few words in very common use may be retained, such as *yes* and *no*; and these the patient may continue to use quite intelligently.

Now, what is the law underlying this difference in the perishableness of words and phrases? Words and phrases are sequences of sound-units. The memories of the most deeply imprinted will naturally be least easily obliterated. Passing over, for the present, conditions of Brain that are favourable for depth of impression, such as Youth and Intelligence, and looking only to Language, we may reasonably suppose that when speech-memories are being acquired by the centres, the two things most favourable to depth and permanency of impression will be Emphasis in the use of the word, and Frequent Repetition of it in speech. Looking at the nouns, which are known to be the parts of speech most easily obliterated, we find that, as everything, and every class of things, has its name, nouns are almost infinitely numerous; and yet, if we examine a few sentences of written or spoken speech, we find that only the abstract nouns and the general terms occur individually with any considerable frequency in ordinary speech, and that the specific names of concrete things do so only at long intervals. Nouns of this latter class, therefore, being seldom repeated, can make no very deep impression on the speech-centres. On the other hand, if we look at adjectives, prepositions, verbs, etc., we find that while they are comparatively few in number, they are individually more frequently used, being often repeated. Some of them also, such as adjectives and adverbs, are often used with considerable emphasis. They therefore fulfil the two conditions favourable to depth of imprintation, and are not easily obliterated. Still more distinctly are the two conditions fulfilled by the words *yes* and *no*, which are often retained when all else is lost. If, again, we consider how abundantly the speech of many individuals is garnished with "strong language," we need not be surprised to find that, when such an individual becomes aphasic, an old familiar oath may suddenly be emitted under the strong stimulus of emotion. It had previously been deeply engraved, both by frequency of repetition and by emphasis of expression.

The opinion has often been expressed that the names of concrete things are easily forgotten because we can think of such things so clearly without recalling their names. But this, of course, is only another way of saying that we do not always mentally *repeat* the names of such objects when we think of them. The necessary frequency of repetition is clearly, therefore, in this case, the factor that is wanting for depth of imprintation.

There are, however, rare cases in which *verbs* are lost more than nouns; and of this special loss of verbs no adequate explanation has yet been given. Kussmaul (p. 795) gives a note of such a case. Here, translated, is what the patient, a man who was "suffering from aphasia and paraphasia," remarked, when his eyes were being examined; the missing verbs and other words which he failed to recall being given in italics:—"I cannot *see* at all Formerly I could *read*, especially *large print;* but, naturally with advancing years, I *was obliged to read* small print *through* spectacles."

OVERFLOW OF EDUCATION INTO THE OPPOSITE HEMISPHERE.—In some cases, words such as *yes* and *no*, and, occasionally, under excitement, oaths or other conventional expressions, may be emitted even when it is quite certain that the educated motor centre for articulate speech *has been totally destroyed*, and is therefore wholly incapable of retaining the memories of even the most deeply imprinted words. These cases clearly show that, in the process of educating the Broca's convolution to the production of articulate speech, there must, at least in a great number of individuals, be a slight Overflow[1] of Education into the corresponding convolution of the opposite hemisphere. This latter convolution evidently receives what may be called the crumbs of education that fall from the table of the Broca's convolution. When the Broca's convolution is totally destroyed, these crumbs, acquired by the corresponding convolution of the opposite hemisphere, are all that remain of the motor memories of articulate speech, however great may have been the stock of these, accumulated in the Broca's convolution. It was Hughlings-Jackson who first directed attention to the little store of words thus often retained in the uneducated centre of the opposite side, when the educated centre has been destroyed. He holds the opinion that the uneducated centre is in a special way related to conventional, emotional, and other forms of what he aptly terms "degraded" speech,—using this term in contrast to intellectual speech, in which each word retains its proper meaning. But, though it is generally admitted that conventional and emotional expressions may be emitted by the uneducated centre after the educated has been destroyed, I do not think it is generally believed that these expressions have been originally relegated to the uneducated centre. The more common opinion certainly favours the explanation that these forms of expression have been imprinted in the educated centre more deeply than any others; and that from the very superabundance of their representation, there has been "overflow" into the centre of the opposite side. In other words, the law which determines the occurrence of overflow of education into the opposite hemisphere seems to be the same that determines the depth of imprintation on the educated side; the two factors that are important for both being Frequency of Repetition and Emphasis of Expression.

A certain slight overflow of education into the opposite hemisphere being thus observable in many cases in connexion with the motor centre for oral articulate speech, it should be here noted that the same phenomenon is also exhibited in connexion with the receptive or auditory centre for incoming speech. In some cases, when this latter centre is totally destroyed on the educated side, none of the words, though heard as sounds, can be interpreted as words. In many cases, however, a certain proportion of words can still be interpreted, probably because of the previous overflow of education into the opposite hemisphere; and the proportion of these seems, on the whole, to be greater than that of the words capable of being produced, in motor aphasia, by the uneducated motor centre. It is not surprising that it should be so, seeing that the education of the auditory centre begins before that of the others, and, throughout, retains the lead.

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[1] The term "overflow," though convenient, is no doubt somewhat figurative, like the term "imprintation" already used. Of course neither term must be taken too literally. In our present state of knowledge, however, it will be found very difficult to treat of either the one phenomenon or the other, without using language that is more or less figurative. If we wished to describe what is here called "Overflow of Education" in terms that are not figurative, it would probably be correct to say that when, in process of education, strong impressions are being made upon the Broca's convolution, feeble impressions are at the same time being made upon the convolution of the opposite side; and that when these feeble impressions have been repeated a very great number of times, they leave, at last, a distinct memory or image in the uneducated centre. This law would, of course, apply to the auditory as well as to the motor centre.

This possibility of overflow of education into the opposite hemisphere, and the varying degree in which it may occur in different individuals, is a confusing element in the study of aphasia. So is also the possible progress of Further Education in what I have termed the uneducated centre, after disease has destroyed the educated one. In young people, this Further Education may speedily bring about an entire restoration of speech; but when aphasia has occurred after completion of bodily growth and development, this education of the uneducated side is usually very difficult, and is often impossible.

RECURRING UTTERANCES.—We have been discussing the fact that, even in cases in which the educated motor centre has been entirely destroyed, the patient, in virtue of overflow of education into the opposite hemisphere, may yet be able appropriately to use certain words such as *yes* or *no*, or to emit, upon occasion, certain emotional or conventional expressions. These all have more or less meaning. It must now be noted that, in like circumstances, a patient may emit from the uneducated centre, whenever he tries to speak, a word or phrase *without meaning*. Whatever he may wish to say, it may be always the same syllable, word, or phrase that he emits. These words and phrases are therefore termed Recurring Utterances. It may be well here shortly to discuss their nature.

Nothing is more common in cases of severe motor aphasia than to find that the patient can utter nothing but a certain recurring syllable, word, or phrase. One of Broca's very first cases exhibited the phenomenon typically. In reply to all questions, he said *tan, tan, tan;* and, in all ordinary circumstances, the same syllable was repeated if he tried spontaneously to make a remark. Only when he was irritated did he startle his hearers by pronouncing, with perfect articulation, the common French oath, "Sacré nom," etc. Trousseau, Hughlings-Jackson, Gairdner, and many others have reported cases showing many varieties of recurring expressions. In one case the word "cousisi" is always emitted; in another, the word "nurse;" in another the word "yes" is articulated, not with its usual meaning, but as a recurring expression without any meaning. In other cases, again, a whole phrase is included in the recurring utterance: as in Dr Russell's case of the manufacturer, seized with aphasia when making an inventory of his goods, who replied "list complete" to every question; and in another case of a patient, seized with aphasia when in danger, whose recurring utterance was always "I want protection."

The question regarding the causes which determine the nature of any recurring utterance is one that has excited much interest. Dr Hughlings-Jackson suggests that, in many cases, the recurring utterance is an expression that has either been emitted, or been at the point of emission, at the moment of seizure, and that has, therefore, in all probability been deeply imprinted by the stimulus of emotion; and many recorded cases clearly indicate that this may be the cause determining the nature of the utterance. But it is not suggested that this is invariably the determining cause. In some cases the effort to speak seems to result, by accident as it were, in the production of some meaningless syllable; and this syllable, once produced, recurs on all subsequent occasions when the patient tries to speak. In others, the attention of friends to the training of the patient results in his being able to pronounce some single word, such as "nurse;" and this afterwards becomes the recurring utterance. The uneducated speech-centre thus learns a word, or phrase, in one way or another, and, having learned, discharges it, and it alone, whenever the effort to speak is made. As Prof. Gairdner says, it is like a barrel-organ that plays always the same tune when the handle is turned.

Just as the aphasic patient may thus, in trying to speak, show that he is *possessed*, as it were, by a single word, so, in trying to write, he may become possessed, or, to use Prof. Gairdner's expression, "intoxicated," by a single letter. He often is able to write the first and second letters of his name, but, instead of coming to the third, he may repeat the second again and again, as if he could not get the image of it to retire, when it is no longer wanted. In other cases, he may repeat, again and again, some special letter of the name, such as *m* or *n*.

It is a large and curious question, this, about the non-retirement of word-images when they are no longer wanted. The wonder is that, in normal conditions, the images are so easily called up, and that they so promptly retire after being used, when they are no longer wanted. And yet they must not retire too soon. We should not be able to grasp the meaning of a sentence, or even of a long word, if we could not retain it in the memory as a whole, after its completion. There is a curious form of aphasia, described by Grashey, in which the chief phenomenon seems to be the too quick retirement of images from the consciousness. We shall have to consider it by-and-by, in connexion with Aphasia due to Functional Causes. That word-images sometimes fail to retire, and give trouble by continuing to obtrude themselves upon the mind when they are not wanted—in the form of "possessions," hallucinations, or impulsions—we have already seen, in connexion with the study of speech in its relations to Insanity. Something of an analogous failure to retire is, I think, exhibited in these two phenomena of aphasia, the Recurring Utterances in speaking and the Recurring Letters in writing. It is exhibited also, in a very interesting manner, by many aphasic patients who are gradually recovering the power of speech. "What is this gentleman's name?" I said to such a patient recently. "Dr Anderson," she replied. "And what is your own name?" "Mary *Anderson*," she said; though she had, a short time previously, given her own name correctly.

(*To be continued.*)

II.—A CASE OF SCARLET FEVER IN PREGNANCY, WITH INFECTION OF THE FŒTUS.

By J. W. Ballantyne, M.D., F.R.C.P. Ed., F.R.S.E., and
David Milligan, M.B., C.M.

(*Read before the Edinburgh Obstetrical Society, 8th March* 1893.)

Scarlatina is an exanthem which is very rarely met with during pregnancy, and some authors have gone so far as to say that the gravid woman is protected from it; but in the case to be narrated, not only did the mother pass through an attack of scarlet fever, but the fœtus in utero likewise caught the infection.

Mrs S., a woman of between 20 and 21 years of age, was pregnant for the first time. She expected her confinement on or about the 21st of April (1893), and during the early part of her pregnancy she enjoyed good health. She had never had scarlet fever. During January and the early part of February, however, she was exposed to the contagion of scarlatina, and on February 7th she complained of slight sore throat. On February 8th Dr D. Milligan, who had been engaged to attend her at her confinement, was called to see her. He found her suffering from a sore throat, which was typically scarlatinal in character. There was an indefinite red rash over the chest and root of the neck; there was a characteristic scarlet fever tongue; and the temperature was 103° F. The provisional diagnosis of scarlatina was made, and salicylate of soda was given, but was almost immediately stopped on account of the headache caused, and quinine was substituted for it. On the morning of February 9th the temperature was 101°·2; the throat was still bad; the rash was now quite distinct, although not copious, and affected chiefly the chest and limbs, and the patient complained of obscure pains in the lower part of the abdomen. No vaginal examination was at this time made, as she had had a dose of cascara, and the abdominal pains were ascribed to its action. On February 10th, at 4 A.M., Dr Milligan was sent for, and he found on his arrival that labour had set in. The early stages were normal, but when the head reached the perineum delay occurred from weakness of the pains. Some ergot was given, but this having no effect, short forceps were applied, and the head was easily shelled out. There was no tear of the perineum, and gentle pressure served to expel the placenta; but there was considerable hæmorrhage, both at the time of its expulsion and immediately afterwards. The bleeding was easily stopped by compression of the uterus, and there was no need for the hot douche that was being prepared. On the day after the confinement (February 11th) the mother's temperature was 101°·8, and her pulse 120; the lochial discharge was small in amount, but had no bad smell.

On February 12th Dr Ballantyne saw the case in consultation; the rash was still visible on the trunk and limbs, but was beginning to fade; the tongue was cleaning at the edges and tip, and the redness was disappearing on one side of the throat. The diagnosis of scarlatina was fully confirmed, and a guarded, but not hopeless, prognosis was given. The patient's husband was particularly anxious about her, for his first wife had died in childbed with her first child. The maternal temperature and pulse were as follows:—

	Temperature: Morning.	Temperature: Evening.	Pulse.
Feb. 8,	103° F.		120
9,	101·2		120
10,	not taken (labour)		120
11,	101·8		120
12,	101·8	102°·8 F.	118
13,	102·4	102·6	112
14,	102·2	101·2	112
15,	100·2		100
16,	102·4		100
17,	100·2		90
18,	99·8		88
19,	99·8		90
20,	99·0		85
21,	98·4		72

There was thus a gradual fall in the temperature, broken only by a slight rise on the sixth day of the puerperium, which was probably due to the commencement of the mammary secretion; and a steady slowing of the pulse-rate. On February 12th castor-oil was given, and the bowels moved four times on that day and thrice on the succeeding day; a dose of liquorice powder was necessary on February 24th. The urine was not examined, as it could not be obtained free from lochial discharge without the use of the catheter, and it was thought safest not to employ that means. The lochial discharge remained sweet throughout, so the antiseptic douche was not used. Desquamation began on February 16th, the ninth day after the sore throat began, and the sixth after the confinement; it pursued the usual course, and was specially marked on the hands. Dr Ballantyne saw the patient again on February 28th, when the desquamation was still going on. She is now convalescent.

Whilst scarlatiniform rashes in the puerperium have been comparatively often noted, cases of true scarlet fever in pregnancy are uncommon occurrences. In this instance, as in most of those recorded by other observers, the appearance of the rash was soon followed by premature labour. The maternal mortality has been high in cases of scarlet fever in pregnancy, but in our case recovery took place.

Let us now turn to the condition of the infant. When born, the child, a female, showed all the signs of immaturity: it was small in size, and its nails were imperfectly developed. It was, however, born alive, and cried, although feebly. It was covered with a thick layer of vernix caseosa, and as there was no lard or fat in the house with which to remove this covering (through the premature occurrence of labour the necessary preparations for the confinement had not been made), the condition of the underlying skin was not ascertained on the day of birth. On the next day, however (February 11th), the nurse drew Dr Milligan's attention to what she described as an unusually marked eruption of the "red gum." She also told him that the infant could not swallow, and for the first few days of life the child only took a few drops of milk, and that with very evident suffering. The skin was hot to the touch.

On February 12th Dr Ballantyne saw the infant. It moaned at intervals, and was restless. The skin was red all over the body, but especially on the shoulders and thighs, and the redness was unlike the physiological erythema of the new-born. On drawing the finger along the skin over the shoulders a transient white line was left. There was some swelling of the glands at the angle of the jaw, and the interior of the mouth was redder and drier than is normal in the new-born infant. The tongue was bright red in colour, but had no white coating; the absence of the white covering may have been due to the fact that the infant was taking no food. The skin was somewhat hot to the touch. An attempt was made to take the temperature, but on introducing the thermometer into the rectum it evidently became embedded in meconium, for the index would not rise. The child would not allow the thermometer to remain in the mouth. During the next few days its condition improved; it slept almost continuously, like all immature infants; it moaned less, and took a few drops of milk without signs of suffering. The cord separated naturally in about a week. Desquamation of the cuticle began about the same date as in the mother, and when Dr Ballantyne again saw the child (February 28th), large flakes were separating from the hands, and finer scales from other parts of the body.

FŒTAL SCARLATINA.

Scarlatina affecting the unborn infant is a condition that has been seldom recorded, and some writers (*e.g.*, W. C. Roberts[1] and Parvin[2]) have gone so far as to say that it has never been met with; but we have been able to collect together fourteen cases in which the diagnosis of fœtal scarlet fever seems to have been well founded, and three others (Nos. 1, 4, and 9) in which it was somewhat doubtful. It is easy to understand how observers have found it difficult to make sure of the existence of this fever in the new-born infant, for several of its distinctive characters are normally present in the child at or soon after birth. Thus, there is a normal redness of the skin, popularly known as the red gum; when this passes off, it is succeeded by exfoliation of the cuticle; and, again, the interior of the mouth in the new-born infant is usually redder and more dry than in older children. Further, the cutaneous redness and the epidermal exfoliation are always specially marked in infants born prematurely, and these facts make the diagnosis of fœtal scarlatina still more difficult, for many of the infants in which this fever was thought to be present have been immature. Nevertheless, a study of the clinical records of many of the recorded cases warrants the belief that they were really examples of fœtal scarlatina, as will be shown immediately.

Historical Notes.—According to L. Thomas, Baillou (Ballonius) was the first to note the existence of fœtal scarlet fever; but the passage referred to does not seem to make this clear. The quotation is as follows:—"Uxor Bodini septimestrem partum excussit vi morbi, eodem modo maculatum (erat enim febris cum rubeolis) quo et mater."[3] Thomas goes on to refer to cases reported by Ferrario, Tourtual, Gregory, Stiebel, and Hüter, which seem to have been true instances of intra-uterine scarlatina; and he notes also the observations of Asmus and Meynet, in which some doubt as to the diagnosis exists. The instances put on record by Williams, Leale, Dwyer, Thorburn, Saffin, Holsburg, Dorsett, and Cordes may be enumerated as genuine examples of scarlet fever acquired by the fœtus in utero.

Clinical Details: 1. *Maternal.*—In most of the cases of fœtal scarlatina the mother was also affected at the same time; but in Nos. 3 and 17 it would appear that she escaped. It is probable that in most instances the mother had never before suffered from the exanthem; but Nos. 10 and 14 were exceptional in this respect, for in them the mother had had scarlet fever previously, and took it a second time when pregnant. The mothers were usually multiparous (Nos. 3, 4, 8, 9, 10, 11, and 14), but in our case she was a primipara. A distinct source of infection was nearly always traced, and with regard to the multiparous women this was generally found in the occurrence of scarlet fever in some of the older children (*e.g.*, Nos. 3, 4, 8, 9, 10, and 14). In two cases (Nos. 3 and 9) the woman had nursed her husband as well as her children through attacks of scarlet fever. In other instances (Nos. 11 and 18) the infection was brought into the house by a visitor or caught by the mother when visiting in an infected house; whilst in No. 5 the disease was epidemic at the time, and in No. 6 puerperal fever was raging.

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[1] Roberts, W. C., *Amer. Journ. of the Med. Sciences*, vol. xxvi. p. 371, 1839.

[2] Parvin, T., *Amer. Med. Assoc. Journal*, April 12, 1884.

[3] *Vide* Schurig's *Embryologia historico-medica*, p. 192, 1732.

It is a noteworthy fact that in all the cases the mother was well advanced in pregnancy when she was attacked with scarlatina, and in consequence of this most of the infants were born at the full term, or nearly so (Nos. 3, 4, 6, 7, 9, 10, 11, 14, and 17). In Nos. 1 and 8, however, the child was born at the seventh month, and in our own case (No. 18) the pregnancy, according to the patient's reckoning, had not quite reached that date. The confinement seems usually to have occurred soon after the appearance of the rash (Nos. 7, 8, 11, 14, and 18), but in some instances delivery did not take place for a week or two (Nos. 3 and 10). In the last mentioned cases the child was born with desquamation going on. The history in No. 13 was interesting, as the mother was exposed to the contagion about a fortnight before delivery, and took the fever about a fortnight afterwards, so that the author (Thorburn) says,—"I can hardly resist the conclusion that the fœtus received the poison and suffered its primary effects whilst yet unborn, the mother being then insusceptible, and that she afterwards, owing to the puerperal weakness, became susceptible, and was infected by her own offspring."

In three out of the eighteen cases (Nos. 6, 11, and 12) it is definitely stated that the mother died, in seven (Nos. 3, 8, 10, 13, 14, 17, and 18) her recovery is noted, and it may be taken for granted that in the remaining eight the issue was also favourable. In No. 6 death occurred four days after delivery from metrophlebitis: in No. 11 the fever was grave in type from the first, and the patient was delirious during labour; her condition improved during the first twenty-four hours after delivery, but thereafter the temperature rose, the rash became purple, and death occurred on the third day of the puerperium: and in No. 12 the mother died in an eclamptic seizure at the moment of delivery.

2. *Infantile.*—In all the cases recorded it would appear that the infant was born alive; in fact, it is necessary for diagnostic purposes that the child be living; a dead-born fœtus may or may not have had scarlatina—it is impossible to tell. In three instances (Nos. 5, 8, and 10) the infant died: in the first on the eighth day of life, in the second on the second day, and in the third at the end of a month (from erysipelas and abscesses). It is probable that in

all the other cases the child lived; it is definitely stated that such was the result in Nos. 3, 4, 9, 11, 13, 14, and 18. Most of the infants were born in the eruptive stage of scarlatina; thus the rash was visible in Nos. 1, 2, 3, 6, 7, 8, 9, 11, 12, 14, 17, and 18; but in Nos. 4, 10, and 13 desquamation was going on at the time of birth, and on this account the diagnosis must remain doubtful in these cases, although it is noteworthy that in No. 13 suppuration of the cervical glands and albuminuria followed the exfoliation of the cuticle. In No. 5 there was neither rash nor desquamation, and the author (Asmus) founded his diagnosis of scarlatina upon the following facts:—Scarlet fever was epidemic at the time; the infant was evidently suffering from some kind of fever, and there was marked angina maligna. In several cases in which the eruption was present at birth the stage of desquamation was reached at a later date: on the ninth day in No. 3, on the tenth in No. 11, on the fifth in No. 14, and on the sixth day of life in No. 18. In No. 9 it is distinctly stated that the eruption was not followed by desquamation, a fact which caused Thomas to doubt the diagnosis; on the other hand, there were noted fever, sore throat, and difficulty in swallowing, circumstances which supported its accuracy. In several of the cases (Nos, 3, 7, 9, 11, and 18) difficulty in deglutition was a symptom early noticed; in others (Nos. 9, 11, 14, and 18) the feverish state was observed; and in yet others (Nos. 5, 9, 11, 17, and 18) sore throat was recorded. In Leale's case (No. 11), which is one of the best reported, the existence of congenital scarlatina was abundantly proved; there was the characteristic rash, followed by desquamation, the difficulty in swallowing, the typical sore throat and tongue, the rise in temperature, and later there followed nephritis and dropsy.

When a pregnant woman takes scarlet fever, the fœtus in utero is not always affected; thus, Louis Thomas reports three cases in which the children escaped (two from Murchison, and one from Elsässer), and the same thing has been occasionally noted by other observers. It would be interesting in such cases to discover whether the child that was immune in utero and at birth remained so in after life.

General Conclusions.

1. When scarlatina occurs in pregnancy the fœtus in utero is usually, but not invariably, affected.

2. It would seem that the infection of mother and fœtus is practically simultaneous, for the infant at birth shows the fever in the same stage as that reached in the mother, and desquamation usually occurs at the same time in both.

Note.—Dr Ballantyne has come to the same conclusion with regard to fœtal measles; *vide* paper in *Archives of Pediatrics,* April 1893.

3. The clinical features of scarlatina in the fœtus and new-born are the same as in later life; but the diagnosis is rendered difficult by the resemblance these symptoms bear to the normal conditions (erythema, desquamation, etc.) met with in the neo-natal state.

4. The prognosis as regards both mother and fœtus is grave, but death does not invariably occur. The supervention of septicæmia is the greatest danger, and the chief treatment should be its prevention.

Bibliography of Fœtal Scarlatina.

1. Ballonius, G., 1574, quoted by Noirot, *Histoire de la Scarlatine*, Paris, 1847; and by L. Thomas in Ziemssen's *Cyclopædia of Medicine*, vol. ii. p. 168, 1876.
2. Ferrario, G., quoted by L. Thomas in Ziemssen's *Cyclopædia of Medicine*, vol. ii. p. 168, 1876.
3. Tourtual, 1826, quoted by L. Thomas do. do.
4. Asmus, 1842, quoted by L. Thomas do. do.
5. Gregory, 1845, quoted by L. Thomas do. do.
6. Hüter, C., Diss. Inaug., Marburg, 1858, quoted by L. Thomas, etc.
7. Stiebel, "Ueber das Scharlach," *Journal für Kinderkrankheiten*, vol. xxxiii. p. 164, 1859.
8. Campbell, W., "Child Born with Scarlet Fever Eruption," *Med. Times and Gazette*, p. 83, vol. ii. for 1870.
9. Meynet, Virchow and Hirsch's *Jahresbericht* for 1871, vol. ii. p. 249.
10. Williams, D. M., *British Med. Journ.*, p. 37, vol. i. for 1875.
11. Leale, C. A., "Scarlet Fever of the Fœtus in Utero," *Medical News*, vol. xliv. p. 635, 1884.
12. Dwyer, in Discussion on Leale's Paper, 1884.
13. Thorburn, quoted by Barnes, *Obstetric Medicine and Surgery*, vol. i. p. 478, 1884.
14. Saffin, W., "Scarlatina in Utero," *New York Medical Record*, April 14, 1886, p. 472, vol. xxix.
15. Holsburg, D. B., "Scarlatinæ in Utero," *Cincin. Lancet Clinic*, vol. xvi. p. 576, 1886.
16. Dorsett, W. B., "A Case of Scarlatina in Utero," *St Louis Med. and Surg. Journal*, p. 79, 1888.
17. Cordes, quoted by Tornery and Durand, *La Rougeole et la Scarlatine dans la Grossesse et les Suites de Couches*, p. 186, Paris, 1891.
18. Our own Case, as reported above, 1893.

III.—CASE OF EPILEPSY CURED BY REMOVAL OF PALMAR CONTRACTION, AND CIRCUMCISION.

By A. G. Miller, F.R.C.S.E., Surgeon to the Edinburgh Royal Infirmary.

From Ward Notes, Edinburgh Royal Infirmary.

J. M., joiner, single, aged 32, Galashiels. Admitted to Ward XVIII., Edinburgh Royal Infirmary, 5th December 1891.

Complaint.—Patient complains of fits, preceded by contraction of flexor muscles of right arm.

History.—Patient says that five years ago he got a fright, having been arrested by the police in mistake for another person, and that he has been very nervous since then. Ten months ago patient had a quarrel with his parents, and left their house. He was in a state of excitement for some weeks after this, and worked very hard at his carpenter's bench to relieve his feelings. About a month after the quarrel he noticed a contraction in the palm of the right hand. About this time he began to have fits.

Patient gives a good account of his personal history and habits. His family history is good.

Present State.—Patient looks a strong, healthy man, but is rather nervous and excitable. The right arm fully as muscular as the left, though he uses the latter rather more. Patient says that the right arm does not feel as strong as the left. There is also a "peculiar" feeling in it which he cannot describe. There is slight contraction of the slips of the palmar fascia going to the ring and little fingers of the right hand, felt most distinctly at the transverse fold of the palm. Patient has a contracted prepuce which closely fits the glans penis. He has also a tendency to inguinal hernia on both sides. (Open inguinal canal probably congenital.)

Character of Fits.—These take place mostly at night, after an emission, and about once a fortnight.

If the patient is awake when the fit is coming on he feels dull. The fingers of the right hand become flexed, and the thumb over them; the arm then flexes till the closed hand touches the right shoulder. The right leg then becomes extended and rigid. The toes are not affected. The respiration becomes rapid, patient hears his heart beating violently, and then becomes unconscious.

When he regains consciousness (which is in about an hour) he finds his mouth covered with saliva, he is very weak and drowsy, and usually falls into a dull, heavy sleep. He has usually to take a rest for a day or two after each attack.

Patient says that if, when he feels an attack coming on, he can have his fingers held out straight and his leg firmly flexed, the fit is checked. At such times he feels his muscles working, but nothing more happens. He says also that if he sleeps on his left side he has no fits.

On December 6th, chloroform having been administered, Mr Miller slit up the prepuce, and also forcibly stretched the contracted palmar fascia, and then put on a splint. Patient was also ordered full doses of pot. bromid. He had a slight fit on 9th December. Patient went home on 16th January 1892, having had no more fits. He had discontinued the bromide of potassium, but wore a posterior splint on the right hand to keep the ring and little fingers extended.

Patient returned some months after, and reported himself quite well.

This case seems to me to show an interesting sequence of events. The man was arrested on suspicion and shut up in jail for a night, having been mistaken, he says, for another person. This gave him a great fright, and ever since then he has been nervous and excitable. Ten months before the commencement of the fits he had a quarrel with his parents, and left their house. He was much excited at this time, and remained in a state of excitement for two or three weeks, during which time he worked very hard to relieve his feelings. Being a carpenter, the nature of his work obliged him to use his right hand a great deal, and at the end of this period he noticed for the first time a hardness in the palm of the right hand, and a contraction of the ring and little fingers. About the same time he had his first fit one day when putting on his coat. After that time he had recurring epileptic fits about once a fortnight for nine months, occurring sometimes at night after an emission, sometimes without this association, but always commencing with flexion of the ring and little fingers of the right hand. Once or twice the fits had been arrested by some one forcibly preventing the flexion of the fingers.

Palmar fascia contraction affecting the ring and little fingers was ascertained to exist in the right hand, as also a well-marked phymosis.

The contracted prepuce was slit up, and the contracted palmar fascia was forcibly stretched and ruptured, so that not only was the contraction rectified, but the palm of the hand felt quite soft and natural.

After the operation the patient had one well-marked epileptic fit, and then no more. At the operation the hand was bandaged to a splint so very tightly that the patient complained of the constriction as very painful and irksome. This may have caused the one fit. After the first night the splint was put on more lightly.

Epilepsy from peripheral irritation is not uncommon. The above case is evidently an example of this, whether the exciting cause was the palmar contraction or the phymosis.

I have seen a well-marked example of epileptic fits due to phymosis. After circumcision the fits ceased for a time, but returned. The operation had been performed by the thermo-cautery, which at the time was being used for everything (tracheotomy among the rest);

marked contraction of the cicatrix occurred (as might have been expected), and paraphymosis resulted. I cut the constriction; the fits again ceased, and have never returned, so far as I know.

I have not seen a case in which palmar fascia contraction was the cause of epilepsy before, but I consider that the one I have recorded is an example.

I have not heard of the patient since the date reported. I wrote to his address to ascertain his present condition, but my letter was returned from the Dead Letter Office.

IV.—SOME MISTAKES IN THE TECHNIQUE OF ABDOMINAL SURGERY.

By J. Rutherford Morison, M.B., F.R.C.S. Eng. & Ed., Senior Assistant Surgeon, Royal Infirmary, Newcastle-on-Tyne.

(*Read before the Medico-Chirurgical Society of Edinburgh*, 1*st March* 1893.)

The present movement in favour of specialism tends to divert the attention of the profession from the fundamental principles of surgery. There is no special surgery of the neck, of the thorax, and of the abdomen, as our surgical text-books would lead one to believe. The general principles of surgery must be observed in all parts of the body, though neglect of this or that canon may be followed by more fatal consequences in one part than in another.

The causes of failure in abdominal surgery are those common to all major operations, and the three most general mistakes are—

1. Septic contamination.
2. Imperfect arrest of hæmorrhage.
3. Neglect of shock.

Sepsis.—Septic infection, unless previously present, is invariably due either to faulty technique at the operation, or to faulty after-treatment. In other words, the surgeon must blame himself or his methods if he fail to keep his case aseptic. Migration of organisms from the intestinal tract, bad surroundings, previous constitutional conditions, dirty visitors, are not to be regarded as fair excuses for a bad result. Abdominal operations at the present day are as successfully performed in the large theatres of the general hospitals as in specially-arranged laparotomy buildings. Visitors are no longer excluded from seeing what they can, and I regard it as immaterial whether they come from dissecting or post-mortem rooms. This opinion is based on the very gravest consideration I can give the subject, and a not inconsiderable experience. It is also a mistake for the surgeon to think abdominal operations should hamper him in his ordinary work. The dressing of ordinary surgical cases, even post-mortem examinations and dissections, are in no way prejudicial to abdominal surgery when suitable antiseptics are properly used. On several occasions I have observed in abdominal wounds dressed for the first time on the tenth day, that though the superficial parts were suppurating the peritoneum was not involved,—both, of course, having been exposed to the same deleterious influences. I have also noticed, not without surprise, that rougher surgery may be perpetrated with impunity inside of the peritoneum than would be tolerated by any portion of the organism outside of it. The unavoidable conclusion is, that the peritoneum has a resisting power not belonging to other tissues. The sudden illness and almost certain death resulting from peritoneal infection impresses us much more than the more common suppuration, prolonged illness, and fever that attend the infection of a stump, and makes a mistake in the abdomen more serious than elsewhere. It is a mistake for a surgeon to undertake abdominal work till he assures himself that he can secure ordinary wound healing without suppuration. When he can do this he need have no fear of the peritoneum.

Details of my methods of preparation would be tiresome. It is sufficient to say that I am guided by the principle of antiseptic precautions before operation ; aseptic precautions, as far as possible, during operation.

Hæmorrhage.—It is a mistake to consider any bleeding point, however small, not worth securing in the abdominal cavity. The peritoneum appears to possess a similar power to the intima of the bloodvessels in preventing coagulation of the blood. This, together with the difficulty of keeping up efficient pressure, makes ligature a specially useful method of arresting bleeding. Free incisions should be made in cases where bleeding is anticipated, and the bleeding points should, if possible, be exposed. A large sponge packed into the pelvis will always temporarily arrest haemorrhage there, and in many cases large retractors, sponge packing, and Trendelenburg's position are invaluable aids. If the bleeding point cannot be satisfactorily tied, clip forceps may be left on it for twenty-four hours. In some cases I have left several pairs of forceps temporarily applied, and always with successful results. If the bleeding comes from a bare surface it should be firmly packed with strips of gauze, which may be taken out in forty-eight or seventy-two hours. In all cases where hæmorrhage is possible a drainage-tube should be inserted. If after-bleeding occurs, a method introduced by Mr Tait is sometimes useful,—I have seen it arrest severe hæmorrhage twice, and both patients recovered. The tube is pumped dry and a syringeful of perchloride of iron solution slowly injected (a piece of solid perchloride the size of a filbert, dissolved in a tumbler of water, makes a solution of suitable strength). The solution is to be pumped in and out a few times till bleeding ceases. In five minutes the tube is again inspected, and if fresh hæmorrhage has occurred more perchloride is injected. The attendant is ordered to keep the tube dry, and re-inject perchloride when necessary.

Shock.—It is a mistake to undertake abdominal operations without making special arrangements to minimize shock. Warmth is the best antidote. It is my custom to have the patient comfortably arranged on the operating-table half an hour before the anaesthetic is administered. The limbs are carefully wrapped in cotton wool or blankets, and bandaged, and hot-water bottles, wrapped in thick flannel, packed under and round the body. In exhausted patients an enema of brandy, milk, and beef-tea is administered. The advantages are,—that the patient selects a position in which breathing is easy; can make complaint if hot bottles are too warm; gets thoroughly heated before the operation commences; that no time is wasted after the anaesthetic is given; and that there is no fussing or re-cleaning of hands dirtied from carrying the patient. The bed about to be occupied should be thoroughly heated during the operation, and only damp or soiled clothing taken off the patient till free perspiration and natural heat are established. The clothing is well protected by the mackintosh I use during the operation. (Mackintosh exhibited.)

It is a mistake to leave a patient suffering from shock untreated. No one should be allowed to die from shock alone, though this is occasionally profound after long abdominal operations. Hæmorrhage, even though slight, greatly adds to the danger from shock. The whole body, except the face, should be enveloped in hot flannels. The face should be vigorously rubbed at intervals with a coarse towel; the interior of the mouth, the gums, and the pharynx should be swabbed with a sponge in forceps wrung out of raw brandy. An enema, slowly administered, of a pint of hot beef-tea and brandy and milk is a useful aid. The foot of the bed should be raised, and pillows taken from underneath the head. Peritoneal flushing with hot solutions, so far as I can judge, results in a sharp but short improvement, followed by prolonged depression.

Before proceeding to discuss more special points in connexion with abdominal surgery, I would emphasize the importance of thoroughness. An *incomplete operation* is most unlikely to be successful. Exploratory operations are not included, for diagnosis is frequently impossible without exploration; but if any attempt at treatment is made, even if it has to be abandoned, the operation is no longer exploratory: If an operation is necessary and is undertaken, it ought to be completed. There should be no limit to its duration or its extent if the completion of it offers a scientific chance of life. Incomplete operations are never satisfactory, and are more disastrous in their results than the most heroic when thoughtfully planned and skilfully executed.

The Incision.—A common mistake is to make this too short. With few exceptions it ought to be large enough to admit the operator's hand without bruising the abdominal wall. From just below the umbilicus to between 1 or 2 inches above the pubis is my ordinary standard. Free exposure of the parts to be dealt with is as important in this as in all surgical work. If a single incision does not allow of free access, rather than incur the risk of damage by working through an insufficient opening, cross cuts should be made. With the exception of the small portion across which the trunk of the deep epigastric artery runs, any part of the abdominal wall may be divided without fear, and will unite satisfactorily if the parts are brought into good apposition by appropriate sutures.

The median incision is the most generally useful, and special directions are given in most works on abdominal surgery as to how to find the middle line. The abdomen may be opened more quickly, and the resulting cicatrix will be stronger if such directions are ignored. With the thumb resting on one side of the upper end of the proposed incision and the fingers on the other, the skin is stretched from side to side, and by upward traction is steadied against the knife, with which all the structures lying above the transversalis fascia are quickly divided. Any bleeding vessels should now be caught in clip forceps, which may be left hanging on the smaller ones, those spirting being tied. To complete the incision through the abdominal wall the transversalis fascia is nipped up on either side with clip forceps and divided between them, then the extra-peritoneal fat is similarly drawn forwards and divided until the peritoneum is reached. If the forceps are kept on one side, to fix it and draw it forward, a deeper hold may be taken of the opposite one, and the underlying structures divided between until the abdomen is opened. It is a mistake to suppose that the peritoneum is a single thin layer of membrane underneath the subperitoneal fat. In some persons, especially obese ones, as many as six layers may require division.

Certain difficulties are met with in getting into the abdominal cavity, and mistakes may be made.

If the abdominal wall is very fat the length of the incision should be proportioned to its thickness, for bruised fat is the worst possible tissue for healing.

Rigidity of the abdominal walls adds to the difficulties and dangers of an operation. A bad anæsthetist, or some peculiarity on the part of the patient, may be the cause. Certain neurotics take chloroform badly from the first, and remain rigid during the whole performance of a long operation, even the most skilled anæsthetist failing to get them satisfactorily under. In such cases I have often seen a change from chloroform to ether, or from ether to chloroform, followed by complete and safe relaxation. The most perfect anæsthesia is, in my opinion, brought about by chloroform administered till insensibility is established, followed by ether administered on an Ormsby's inhaler. The depression of chloroform and the violent respiratory movements of ether are both avoided.

The peritoneum, when reached, may be mistaken for a tumour wall, and extensively stripped. This occurred to me in one of my earliest ovariotomies. The patient had carried an immense ovarian tumour in her abdomen for twenty years. The peritoneum was much thickened and laminated, and after dividing several layers I concluded that I was working through the wall of a universally adherent cyst, which I began to peel off. After making an extensive separation, I thought tapping the cyst with a trocar might aid me, and emptying the cyst I introduced my finger through the trocar opening, and found the tumour without a single adhesion. The peritoneum in this case was a quarter of an inch thick in front, and so firm that the convex shape given to it by the tumour was retained after the operation was completed. This patient, in spite of the serious error, made a good recovery, as most old cases do. In other cases of long-standing tumour I have seen much thickened peritoneum in front.

In another instructive case I had the opportunity of watching, a double mistake was made. The patient had an abdominal swelling, diagnosed as an ovarian cyst. On dividing the abdominal wall, a thick, unyielding, tough membranous layer was arrived at. An incision into this showed a laminated structure, and without opening the sac it was concluded that a large ovarian cyst was universally adherent. An attempt to separate it was very successful in front, for the adhesions gave way quite easily, and the whole anterior surface was soon bared. Towards the back matters were not going so smoothly, when suddenly a gush of straw-coloured liquid and some intestines appeared. The case was one of tubercular encysted peritonitis, and got well after the operation. In all cases of doubt the rule should be to cut right on. If a cyst is universally adherent it is best opened with the knife, and if the case is encysted peritonitis, intestines will appear on opening the sac, and in either case the difficulty is cleared up.

In an ordinary case the peritoneum on either side should be caught in clip forceps, and held during the intra-abdominal manipulation, otherwise it may be stripped from the abdominal parietes.

The *bladder* may be wounded in making the abdominal incision. I have seen it done several times, and more than once by distinguished and careful surgeons. To have it empty is no safeguard, for it may be pushed up from below or drawn up from above. A finger in the peritoneum may be useless as a guide, for in some persons the bladder is a very thin and unresisting viscus. I have made by mistake a free incision into it, when lying on and stretched between the index and middle fingers of my left hand. A distended bladder may be wounded from the front before the peritoneum is opened, and though such an accident might be avoided by a recognition of the muscular fibres, this is not in the least likely. The mistake is a disagreeable and disconcerting one, occurring, as it does, at the commencement of a serious operation, though it does not appear to add materially to the risks; for in all the cases I have seen, except one, the operation was proceeded with, after careful suturing of the wounded bladder, and all the patients recovered. There is, I believe, only one method of avoiding this accident. In every case I open the peritoneum at the upper part of the wound, and consequently quite away from the bladder. I then pass both forefingers into the opening, and steadying the peritoneum above with my left forefinger, tear it down with my right forefinger the length of the wound. The bladder cannot be damaged, for it does not tear with any reasonable degree of force, and the peritoneum easily tears, and in a fairly straight line.

Intestine may be wounded in making the abdominal incision. If the peritoneum is picked up by forceps in the manner described and gently shaken, intestine, unless adherent, will drop away from it. If the intestine be adherent, another place should be tried. This accident is a disagreeable one, but cannot be dangerous if careful suture of the wounded bowel is practised; for though I have only seen it done once, and in that case recovery followed, I have frequently repaired much more dangerous lesions of the intestines with success.

In *suturing the abdominal wall* several mistakes may be made. The most serious of these is the inclusion of a portion of intestine in a loop of suture under the abdominal wall. It is most likely to occur when the abdomen is tense, and the intestines have a tendency to protrude. It is to be avoided by passing all sutures before any are tied, and adopting some definite method of arranging them. I fix the ends of the sutures of one side in one pair of clip forceps, and the ends of the opposite side in another pair. When all are fixed and the abdomen is ready to be closed, an assistant takes the bunch of sutures on either side in each hand, and the clips are detached. Lifting all the sutures up together, he draws the abdominal walls firmly forward by them, away from omentum and intestine, which are to be kept back if in the way. The sutures are carefully tied one by one from above downwards, whilst traction is kept up on those untied by the assistant until the last one is reached.

Faulty suturing results frequently in ventral hernia. When a patient is in good condition, I regard it as a mistake not to suture in three layers,—peritoneum to peritoneum, muscle and aponeurosis to muscle and aponeurosis, and skin to skin. I have used this method for some years, and largely, but have never seen ventral hernia follow. The resulting cicatrix is so firm that there is little chance of it. The layers of abdominal wall, when this form of suturing is employed, are pushed apart by exudation from the wound surfaces, and a thick layer of organizable lymph extends between skin and peritoneum. By the ordinary method of suturing, skin aponeurosis and peritoneum are firmly drawn together, and the resulting cicatrix is thin and weak, and this is more especially apt to follow if the peritoneum is allowed to intrude between the wound surfaces.

After sutures are taken out, long strips of plaster should be applied over the dressings,—for it is no uncommon thing to have intestines bursting through the newly-healed wound if this or some similar precaution is neglected.

To leave a *sponge or a pair of forceps* in the abdomen is a terrible mistake, and the nightmare of abdominal surgeons. It has been frequently done—more often than most of us suspect—and is only to be avoided by the greatest care. On this point it is scarcely possible to be too anxious.

It is a mistake to leave uncovered intestine next to the abdominal wound, when this can be avoided by drawing down the *omentum* over it. I lost a case, seventeen days after ovariotomy, from intestinal obstruction due to adhesion of coils of intestine to the abdominal wall.

Washing out of the peritoneal cavity after operations is a useful practice, but it is a mistake to use flushing indiscriminately. Sterilized normal saline is, to my mind, the most perfect fluid to use for this purpose. Histologists point out that water is inimical to protoplasm, and that the tissues are least damaged by normal saline. I keep a large tank of sterilized saline in my operating-room ready for use after heating to 110° F. It stands on a high stool, and the fluid is conveyed into the abdominal cavity by a long india-rubber tube, ending in a long perforated glass one. (Special tube exhibited.) Before turning on the fluid, it is well to have a large glass drainage-tube in Douglas's pouch to allow of free exit, otherwise the abdomen may become dangerously distended, and the intestines may be forced out of the cavity with a rush. The use of the irrigator should be limited to cases in which blood, ovarian fluids, intestinal or other visceral contents have escaped into the peritoneum; to limited collections of pus it is quite unsuitable, as there is great risk of a diffuse purulent infection.

The *drainage-tube* is one of the most valuable aids in abdominal surgery, but accidents may happen from its use. If the india-rubber tubing connected with a powerful exhaust syringe fits the glass drainage-tube too closely, omentum, and even intestine, as I have heard, may be drawn into the interior of the tube. A sickening sensation experienced by the patient, with evidence of some obstruction in the tube, occasionally discovers the accident at once, but frequently no complaint is made, and it is not noticed till the tube is withdrawn. My first knowledge of the accident was obtained from a case in which I had operated for pyosalpinx five days previously. On trying to remove the tube I met with some resistance, and overcame it with a gentle jerk. The tube came away filled up with omentum, and before I had grasped the situation a considerable piece of omentum followed. Endeavours to return this through the drainage-tube opening were fruitless, and rather than re-open the healed wound I ligatured and cut off the mass, returning the stump. My second case was a woman from whose broad ligament I had enucleated a cyst three days before. In trying to remove the tube I felt some resistance, as in the last case, and, warned by that experience, carefully drew the end of it into view. Every hole of the tube was firmly plugged with a little pellet of omentum, each of which I ligatured close to the tube before dividing it and returning it to the abdomen. My third case was one of ectopic gestation, and occurred whilst I was emptying the tube the day after having operated. The same course was adopted in this case as in the last. All three recovered.

Chilling of the intestines adds much to the shock and danger of an operation. If the escape of intestines cannot be avoided, it is essential that warm, moist towels or flat sponges be kept covering them. The importance of this was impressed upon me specially by the case of a man on whom inguinal colotomy had been performed a few hours before I saw him. During an attack of vomiting a large part of his intestines escaped, and at the time of my visit were lying all over his dressings and in the bed, mixed up with the blankets. He was cold, weak, and had a sunken, dying appearance. His chilled intestines were covered with warm towels, and at once the change in his expression and condition was notably improved. After washing his intestines well in a basin of warm boracic lotion, to remove particles of blanket, wood-wool, and other adherent matter, they were replaced, and he recovered without further trouble.

In *difficult cases*, where landmarks are obscured, it is a mistake to work in the dark. With a free incision, large retractors, sponge packing, a good light, and, in pelvic cases, Trendelenburg's position, there should be no difficulty in seeing any part of the abdominal or pelvic cavities.

The most unsatisfactory cases in abdominal surgery are those of *acute general peritonitis*, for they nearly all die. It is a mistake to expect to do any good for them by incision, washing out, and drainage, as commonly performed. Frequent or constant irrigation appears to me to hold out a better chance of success, but, though I have tried it more than once, as yet I can report nothing but failure.

Recognising, as we all do, that peritonitis is so rarely idiopathic, that it may justly be regarded as a symptom only, it seems reasonable always to look for a cause. This is good pathology, but may be, and frequently is, a mistake in surgery, especially where pus is localized by recent adhesions. Take the case of an acute tender swelling in the right iliac fossa, with grave constitutional disturbance and the possibility of pus formation. No surgeon would hesitate to divide the abdominal wall over the swelling, and ascertain its contents. Having found pus, he might go in search of a vermiform appendix or a diseased ovary or tube, but this I hold to be a mistake. If a diseased appendix or other such cause presents in the wound, the proper thing is to remove it, but no regular search for a hidden cause should be made. There is grave risk of causing diffuse general peritonitis by disturbance of adhesions in such a case; prolonged search may end in failure to find anything,—it does so frequently on post-mortem examination; a large percentage of cases of localized purulent peritonitis recover after incision and drainage only; and if a further operation is necessary, it may be performed later, when the local and general conditions of the patient are improved.

The next most unsatisfactory cases in abdominal surgery are those of *acute intestinal obstruction.* Occasionally a case is met with due to occlusion of the large intestine; but for this the results would be even more unsatisfactory. When surgical aid is sought, most patients are so ill that it is a mistake to suppose that prolonged anæsthesia can be maintained or a difficult operation can be performed with any chance of success. My present practice in such cases is to operate with the patient in bed, to give a small quantity of the anæsthetic, having all instruments ready and preparations made before commencing the anæsthesia, and to open the abdomen quickly, as for inguinal colotomy, midway between anterior superior spine of ilium and umbilicus. If the sigmoid flexure is distended, the operation is completed by drawing a loop of it out, tying in a glass drainage-tube, and introducing a few sutures; if the obstruction is above this, the most convenient coil of distended small intestine is withdrawn and similarly dealt with, and an artificial anus left, to be treated subsequently.

This instrument is one which I have invented for the purpose of shortening, simplifying, and completing at one stage operations undertaken for the removal of growths of the intestine, gangrenous portions of bowel, small irreducible intussusceptions, etc. (Instrument exhibited.)

Inguinal colotomy, though an easy and safe operation, may be unsuccessful in consequence of mistakes. In two cases I have seen intestines protrude through the inguinal colotomy opening,—in one from inefficient suturing, in the other from placing too great confidence on rods passed through the mesentery. In two cases in which I made post-mortem examination, death resulted, shortly after operation, from acute peritonitis. In one a large abscess in connexion with the malignant growth had been ruptured in drawing forward the adherent sigmoid flexure; in the second case fæcal matter had escaped from a hole in the sigmoid flexure, produced by the separation of adhesions blocking a perforation. The moral is plain: if, after careful examination, it is decided that the sigmoid flexure is adherent, the operation should be completed by opening the transverse colon.

In the operations of *ovariotomy and for removal of the uterine* *appendages* the pedicle may slip out of the ligature and the patient die of hæmorrhage. On two occasions I have had the opportunity of observing how this is brought about. In both cases the pedicle appeared to be firmly tied, but before the abdomen was closed a large swelling had appeared in the broad ligament of the side operated upon. The ovarian artery had slipped back into the cellular tissue, a broad ligament hæmatocele had formed, and the tissues surrounded by the ligature were drawn out of its grasp, allowing the hæmatocele to burst into the peritoneal cavity. It is a mistake to employ very thick silk for tying the pedicle, for it has an insufficient bite of the tissues, and half an inch, at least, of pedicle should be left beyond the ligature. In many cases it is a good plan to tie the ovarian artery with an independent ligature, passed through the infundibulo-pelvic ligament, in which the vessel can be felt pulsating.

In *suprapubic cystotomy or lumbar nephrectomy* the mistake of opening the peritoneum may be made. If the opening is recognised before the peritoneum is soiled, it should be caught in clip forceps and ligatured. No harm will result in either case. A suture cannot be trusted to close the opening effectually, but a ligature can, for I have seen the operation completed with success, in spite of this accident, in both bladder and kidney cases.

In two cases of lumbar nephrectomy I have seen the peritoneum wounded and fouled by the discharge of the contents of the diseased kidney. In both cases an opening was made above the pubis, through which the abdominal cavity was irrigated and drained. Both patients recovered.

V.—THE THERAPEUTICS OF BORACIC ACID.

By David W. Aitken, M.B., C.M.

Boracic acid possesses properties which are so valuable to the practitioner, that it may be well not only to give a *résumé* of them, but also to point out their special applicability in certain conditions.

1. *Erysipelas and Acute Eczema.*—In these affections boracic acid seems to exert a special influence, for the rapid improvement can scarcely be wholly ascribed to its antiseptic powers.

The method of application is as follows:—The affected surface is to be first well smeared with a saturated solution in glycerine, and then covered with lint and gutta-percha tissue,—care being taken not to have the bandage too tight. Even the face can be thus treated, by leaving small holes at the nostrils and mouth. Where pain is a prominent symptom, Extr. belladon. may be added. This treatment is not only much more effectual in erysipelas than painting with Tr. iodi., but is much more comfortable, because the iodine makes the skin hard, and thus the painful tension is increased. In *chronic* eczema Dr Argyll Robertson's plan of painting with $AGNO_3$, 30 grs. to ℥j., is magical in its good effect.

2. *Ophthalmia Neonatorum.*—The text-books enforce the necessity of attending to the eyes every two hours. It is, of course, impossible in general practice for the medical attendant to do this, and experience shows that, if left to others, the performance is merely perfunctory.

The following plan, however, meets the difficulty. Let the eyes be well washed, by means of a syringe, with boracic lotion. Then apply the remedy according to the accompanying formula:—

℞	Alum. sulph., . .	gr. 1.
	Ac. boracic, . .	gr. 20.
	Ol. olivæ, . . .	℥j.

Sig.—To be applied several times a day.

In many cases this will effect a cure, and at any rate it will prevent retrogression until the attendant can return in the evening, when he can not only repeat the washing, which he alone can do efficiently, but can apply more potent agents if need be. In these cases the advantages of the boracic acid depend upon its antiseptic power, its blandness, and in some measure to its slow rate of solvency. Thence it remains longer in contact with the parts than an antiseptic which dissolves rapidly.

Probably we should see fewer cases of conjunctivitis in infants were it made a routine practice to prescribe the above application for all newly-born infants.

It may be remarked, in passing, that boracic acid is best applied in this way, either dissolved in glycerine or oil, for otorrhœa. As the remedy can only act in solution (the same applies to iodoform), it is well to dissolve it at once, as manifestly the glycerine or oil is a better vehicle than pus. Besides, the dry powder—and especially in inexperienced hands—is apt to clog and block up the meatus, with resulting pain and tension. Glycerine is the better to commence with. When the stench is removed and the pus healthy, oil does well, as being blander.

3. *Gynæcology and Midwifery.*—In these cases the value of the medicament can be well shown by citing two cases.

Case I.—Mrs X., æt. 26, suffered from a polypoid uterine fibroid attached to the fundus. Besides serious losses of blood, there was, owing to erosion of the surface of the polypus, an offensive discharge, so that at the time of operation the patient was showing signs of septic absorption. The temp. was 101° F. The problem was to render the uterine interior aseptic, and to maintain that condition with the least trouble and disturbance to the patient as possible. The following plan was hit upon:—First a thick paste was made of sterilized olive oil and boracic acid. As a ready means of introducing this a long glass syringe with a nozzle was selected; the nozzle was removed by means of a file, and thus an orifice about ¼ in. was made. In order to round the sharp edges they were heated in a gas jet. It was then possible to eject the thick mixture through the wide opening into the uterus. Here the three attributes—solidity and slow solubility, asepticity, and blandness—did such good service that not only did the temperature gradually decline, though in such a way as to show that any neglect would be speedily followed by a rise, but it was found that it was only necessary to apply the douche night and morning, the boracic acid maintaining its good influence during the intervening twelve hours. It is unquestionable that the boracic acid conferred a great and twofold benefit.

1. It saved a great deal of annoyance to the patient, the douching being so seldom necessary.

2. It permitted the carrying out of the maxim, "If you want success, do the thing yourself."

The patient made a rapid recovery.

Case II.—Mrs Y., æt. 27, confined for first time. Three days after the birth both patient and nurse were seized with influenza. The temperature in the morning was 105° F. At night it was 106° F. The lochia became at once very offensive. There was some uterine tenderness, and some abdominal tension.

Though the condition was so serious, yet by the use of the boracic paste the uterine complication was soon got rid of. The douche was effectively applied night and morning only, and the case then proved itself to be of moderate intensity as regards the attack of influenza. For that, aromatic extract of ammonia and salicylate of soda seemed very useful.

In this case the relief from frequent douching was very great, for the patient resided at a long distance, and, besides, she was very inefficiently nursed.

4. *Sinus and Fistula.*—Here, again, the statement of a case will be most useful.

Ellen C., æt. 6, with spinal disease in the upper dorsal region, had a sinus which opened in the posterior triangle of the neck. Under chloroform it was decided that there was no connexion between the sinus and the spinal condition. The child was so weak, and her alarm and struggling so great, that it was found quite impossible to adopt the usual plan of stuffing from the bottom with lint. But after once filling the sinus with the paste (in which there was also a trace of iodoform) she not only submitted much more quietly, but it is quite open to question whether the method did not prove more satisfactory, as regards healing, than the ordinary plan of enlarging the opening and stuffing with lint. The sinus was slightly distended by applying the orifice of the syringe to the mouth of the sinus. The effect was practically that of a bougie of somewhat greater diameter than the sinus, but the application was much easier effected, and with much less trouble to the patient.

The same good result was attained in a fistula in ano, but it is not necessary to give the details.

In these cases the additional advantage is derived from the moderate mechanical irritation which its solid condition enables the acid to exert. Repeated daily, the application will prevent the contraction of the sinus walls, and so permit of healing from the bottom.

5. *Cystitis.*—The treatment in these cases, of course, depends often chiefly upon the cause, but probably the condition oftenest arises in men from enlarged prostate, and in women from injury and infection at childbirth and from gonorrhœa. Now in such boracic acid exercises a wonderful influncee for good. The method which seems to give the best results is the application by means of the douche.

It is essential to give earnest heed to two important matters—

1*st*, To avoid the entrance of septic material into the bladder. Even in cases already septic we aim at producing *asepsis,* and *maintaining* it. This can be readily accomplished by the use of Dr Foulis's ⊢ tap,—which, by the way, would be much improved by the addition of another stop-cock. However, this can be dispensed with by pinching the tubes alternately. The douche is to be filled with a warm solution of boric acid (teaspoonful to the pint), and before use the waste tube should be pinched while the stop-cock is opened for a moment. This allows the supply tube and catheter to be filled with solution, and hence all air is expelled.

Another point to be attended to is to have the waste tube always under water by attaching a small weight (iron screw nut) to the end. After carefully anointing the catheter (which, up to this moment, should be in the douche), it must be slowly and gently insinuated along the urethra. If much urine is retained in the bladder, the latter is to be emptied. Then the proceeding consists in alternately running in and drawing off about two ounces of the solution. Lastly, never allow the supply tube to become empty; and it may be added that it has been found useful sometimes to leave a small quantity of the aseptic solution in the bladder.

2*nd*, To avoid irritation of the urethra. In Mr Hutchinson's rubber catheter we have the means of practically attaining this important end. Many cases might be cited, but one will amply illustrate the success of the treatment.

Mr B., æt. 63, had suffered for about seven years from difficulty in passing his water. Only small quantities, and only by effort, could be passed at a time. One interesting fact in the case is that some time ago he took a sea voyage for a week, and found that while on board he could pass his water much more freely.

When seen, more than a year ago, the symptoms were great difficulty in urinating, pain and burning in the hypogastrium and in the perineum. The water had a foul smell, and contained a large deposit of pus. But further, the patient was suffering from septic absorption. The temperature was 102° to 103°. He had several rigors, and was vomiting a good deal. The pulse was slow and feeble. Physical examination, however, did not reveal any enlargement of the prostate.

The treatment consisted almost solely in douching with boracic acid solution in the manner described. It was done at first daily, or oftener, when irritation was present, and then every other day. The relief was marked from the first, and now he uses the douche once a week. With this small amount of trouble he boasts that he is as well as any one. Neither in this case nor in any of the others was there any sign of catheter fever or urethral irritation, so smoothly did the rubber instrument slide along the urinary passage.

To those who deny the germicidal powers of boric acid, it may be replied, that there are evidently other ways of securing asepticity than killing the microbes; for example, rendering their surroundings wholly uncongenial.

VI.—A CASE OF PANCREATIC CYST.

By A. Angus Martin, L.R.C.P.E., L.R.C.S.E., North Shields, and J. Rutherford Morison, F.R.C.S. Edin., Senior Assistant Surgeon, Royal Infirmary, Newcastle-on-Tyne.

Traumatic cysts of the pancreas are so rare that I think the following one is worthy of being put on record. I have to thank my friend Mr Rutherford Morison for seeing the case and undertaking the second laparotomy.

R. F., æt. 17, hawker of fruit, came to me on the 26th of March 1892, complaining of pain in his abdomen.

History.—On the 1st of March he was crushed between a wall and his cart, the back of the cart pressing into his abdomen. He was much hurt and felt great pain, and was able only to walk a few yards when he fell, the severity of the pain causing him to fall. He felt sick, but did not vomit, and was carried home and put to bed. The pain continued to be very severe in his belly, and prevented him from sleeping that night. On the second or third day after the accident he vomited for the first time—a greenish fluid. His bowels did not move for three or four days after being hurt, and then only by taking purgative medicines, which pained him severely. There was no blood in his motions. For a week he remained in bed owing to the pain. During the second week he improved and was able to get up, and a fortnight after the accident he went to work, feeling quite well. He continued at work for nearly a fortnight, during the last three days of which he had pain and vomiting as before.

On examining his abdomen it was found to be prominent in the middle line above the umbilicus and downward towards the right iliac fossa. On palpation this swelling was tense and resistant. There was also free fluid in the peritoneal cavity. A diagnosis of encysted peritonitis was made. He was sent off to bed, and watched for several days, during which he rapidly got worse. He had severe attacks of pain and vomiting of greenish fluid. The swelling in his abdomen increased. I inserted a hypodermic needle into it, and drew off a syringeful of fluid of a pale-yellowish colour. As it was evident he was getting rapidly worse, I decided on opening his abdomen. This was done on April 3rd. Fluid escaped immediately on opening the peritoneum. There were flakes of lymph on the intestines. I aspirated the cyst, but could not get it to the abdominal wall. It did not strike me to do what Mr Morison afterwards did,—divide the gastro-colic omentum. I inserted a Keith's drainage-tube, and stitched up the abdomen, after washing out the peritoneal cavity. The drainage-tube was removed at the end of forty-eight hours. He got well without a bad symptom.

Knowing that the cyst in all probability would refill, I asked Mr Rutherford Morison to see him, which he did a fortnight after operation. The wound was then quite healed. There was a cystic tumour in the abdomen about the size of a fœtal head. It was fixed, and from its relations to stomach and colon, its position in the abdomen, and the history, Mr Morison thought it was a pancreatic cyst, and that the fluid removed was the result of peritonitis. At this time he was free from pain or other symptoms. He went home and continued well until one day when in my house he was seized with a very bad pain in the belly. The pain was not of the same character as he had previously had. It was located over the middle of the abdomen, and has continued more or less till the present time. He vomited the night that the pain came on, and once next day. The pain was attended by rumbling of the bowels; they swelled and got hard. The last day he has been easier, and the bowels have got softer. It was arranged that if he got worse Mr Morison would take him into his private hospital. He went there the following day.

He has had no previous illness of any importance. Family history is good.

May 10, 1892.—The patient is tall, thin, delicate-looking; young-looking for his years, with fair hair, light blue eyes, and bright complexion; no hair on his face, no bad teeth. Appears emaciated; skin dry and harsh; pulse 130; tongue thickly furred, papillæ showing as bright red spots; appetite good; bowels regular. He has no cough. Heart, lungs, and urine normal.

Abdomen.—A recent cicatrix, 4 inches long, below the umbilicus. Whole abdomen swollen and prominent in front, with increased fulness below the umbilicus. The left flank bulges more than the right, but not to any marked extent. No enlarged veins or œdema of skin. On palpation the abdomen is tender all over, and feels full and tense. No fluctuation from side to side, but in the left flank a fluid wave is perceptible on percussion anywhere to the left of the umbilicus. There are no nodules or thickening in any part, only a uniform elasticity. With the patient lying on his back the abdomen is tympanitic all over, except at the lower part below a line drawn from right anterior superior spine of ilium to the centre of left Poupart's ligament, and in the left flank from a line drawn directly upwards from left anterior superior spine of ilium. The left flank clear on turning him to the right side, and *vice versa*. The lumbar sounds are clear on percussion. The liver dulness in mammary line extends from nipple to just above the costal margin (3¾ inches).

Operation, May 23, 1892, under chloroform.—On opening the abdomen, omentum is adherent to the parietal peritoneum round the incision. It was stripped off, and a quantity (2 quarts?) of dirty purulent-looking serum, free from smell, escaped. The intestines were roughened with purulent lymph, and sticky. On turning the transverse colon up, a cyst about the size of a turnip was seen behind and under the stomach. A hypodermic needle withdrew fluid from this, which rapidly converted starch into sugar. It was seen to be impossible to get this portion of cyst into apposition with the abdominal wall, so the transverse colon was replaced. The gastro-colic omentum was now divided, and the colon being drawn down and the stomach up, a large vessel in the gastro-colic omentum was wounded, caught, and ligatured. The cyst was now fairly exposed, tapped, emptied, drawn forward, and sutured to the abdominal wall. The fluid was saved for analysis. The abdomen was carefully sponged out. A large glass drainage-tube was left in the peritoneal cavity; another, of india-rubber, in the pancreatic cyst.

After-Progress.—His recovery was uneventful, no symptoms of any sort troubling him after operation. In three weeks he was sent home with a granulating opening, and a sinus 1½ inch deep where pancreatic cyst had been. The remainder of the abdominal wound was strong, and healed. The sinus closed two months after operation. Appended is Professor Bedson's report of analysis of fluid removed.

THE DURHAM COLLEGE OF SCIENCE,
NEWCASTLE-UPON-TYNE, *June* 11, 1892.

DEAR DR MORISON,—The liquid forwarded by you has been carefully examined, and it is found to contain—

2·14 per cent. of total solids.
·772 per cent. of ash.

The dissolved solids consist mainly of albumen, together with some fat and a small amount of urea.

As pointed out by you, a ferment is present which acts quickly on starch, converting it into glucose.

The ash consists mainly of common salt (sodium chloride). Sulphates in lesser quantity, and traces of calcium, potassium, magnesium, iron, and phosphates are also present.

The liquid was yellowish and turbid, smelt of carbolic acid, and was alkaline to litmus.

A careful examination failed to detect any other bodies except those named above.—Yours faithfully,

P. PHILLIPS BEDSON.

VII.—NOTE ON A METHOD OF STATING THE DEGREE OF CLEARNESS OF SEWAGE AND OTHER DEGRADED EFFLUENTS.

By ALEXANDER C. HOUSTON, M.B., D.Sc., Edinburgh.

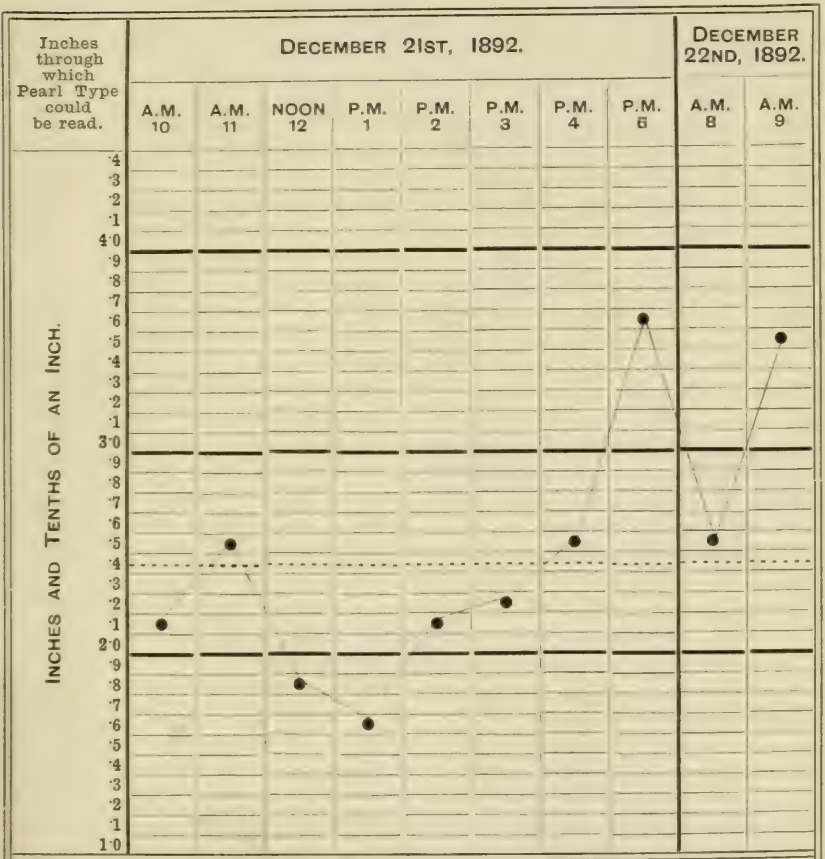
IN remarking on the quality of an effluent, it is customary to speak of the liquid in general words as being more or less turbid, or more or less clear. These terms, however, have little or no real significance. It is believed that by the following simple method a true comparison can be drawn between different effluents. I shall first give a description of the process, and then endeavour to show that the results obtained by it are satisfactory and accurate.

The effluent to be examined is slowly poured into a glass beaker or cylinder standing on a sheet of printed paper. The printed matter must represent a definite known type—pearl type being, perhaps, the most suitable. The pouring in of the liquid is continued until the observer, looking down through the effluent, can only just read the words through it. The height of the liquid is measured by placing one of the legs of a pair of compasses on the paper, and the other on the lower band of the meniscus of the fluid, the distance between the two points being found by measurement on a scale divided into inches and tenths of an inch. At first sight it would seem to be a better plan to have a tall beaker or cylinder graduated, and to read off the height of the liquid directly. But if this plan is adopted the difficulty arises, that while the focal distance of the eye is constant, the height of the liquid in the cylinder will vary with the quality of the effluent, and in the case of a very turbid fluid it may be a mechanical impossibility to bring the eye within the range of natural vision. For this reason it is necessary to employ beakers or cylinders of varying height, and to use the tall or the short vessels according to the quality of the effluent.

A large number of sewage effluents have been examined in this way with satisfactory results. As a comparative indication of the quality of a particular effluent, the character of which it is

TABLE.

CHART showing the Clearness of a Sewage Effluent,—being the number of Inches in depth of the Effluent through which Pearl Type could be read.



The dotted line shows the line of average clearness. Equal amounts of the effluent at each of the above hours were laid aside and then mixed together. The clearness of the average sample thus obtained was determined, and was found to be 2·3 inches. The difference between the clearness of this average sample (2·3) and the average clearness (2·4) of the different samples, separately determined, is therefore only ·1 of an inch.

necessary to ascertain repeatedly without the aid of chemical analyses, the method is specially valuable.

In order to test the accuracy of the process the following plan was adopted:—A sample of an effluent was collected at the hours shown in the accompanying Table, a fixed and equal amount being laid aside each hour, and the rest used to determine the degree of clearness for that particular hour. The clearness of the average sample obtained by adding together the equal amounts of the effluent set aside for each of the hours was found to be 2·3 (being the number of inches in depth of the effluent through which pearl type could be read), while the average clearness of the separate hourly determinations was 2·4 inches—a difference of only ·1 of an inch. The table shows this result, and it also shows graphically the variations in the clearness of the effluent.

VIII.—A CASE OF PARALDEHYDE HABIT.

By Frank Ashby Elkins, M.B., Senior Assistant Physician, Royal Edinburgh Asylum.

When paraldehyde was first introduced to the notice of the profession as a hypnotic it was pointed out that one of the advantages of the new drug would be that, on account of its disagreeable taste and smell, a habit would not be likely to be acquired by those using it. The following case proves, however, that even with paraldehyde, as with most hypnotics and sedatives, there is danger of a habit becoming established.

For the sake of brevity, in this report the treatment adopted, except as regards the hypnotics used, is omitted.

A. B., married, a coachman, aged 65, was admitted as a voluntary patient to the Royal Edinburgh Asylum on November 23rd, 1892, on account of the paraldehyde habit.

Disposition and Habits.—He bore the character of a respectable, steady, cheerful man, but those who knew him well said he was liable to take offence easily, and was sometimes suspicious and unreasonable.

Hereditary History.—A brother died in Inverness Asylum. He was alcoholic.

History on Admission.—For seven years he had been troubled with insomnia, and this symptom had been gradually getting worse. Two years and two months ago he began, under medical advice, to take small does of paraldehyde, which he found useful. A habit was soon acquired, and on his own authority the doses were quickly increased, so that just before he came to the Asylum he was taking as much as sixteen ounces of the drug a week. Under this treatment he became very emaciated, and lost two stones in weight in the six months immediately before admission. He got so weak that he had to lie in bed, and was fed by his wife with a spoon like a child.

State on Admission.—He complained bitterly of the insomnia, saying that in spite of "seven teaspoonfuls" of paraldehyde he had slept only half an hour the previous night. He was emaciated and anæmic, and had an exhausted, harassed look. The tongue and facial muscles, and also the hands, were very tremulous, and, indeed, he was generally tremulous, like a case of *delirium tremens.* His gait was very feeble and unsteady, and all his movements were slow, like those of a very tired man. The heart's action was weak and irregular, the cardiac sounds being often difficult to hear, and the sequence of events difficult to follow. He complained of palpitation. The pulse was 74 per minute, and intermitted every 10–12 beats, and the volume of the beats was unequal. He complained of stomach derangement, especially of flatulence. The bowels were costive, the appetite was large, and he thought the paraldehyde increased it. He complained of strange feelings running through his body, some of which he described as "sort of shivers." He said he felt restless and nervous; and he was very anxious and, indeed, frightened about his condition. His breath smelt strongly of paraldehyde. The temperature was 98° F., and the weight 8 stones. The urine obtained during the first twenty-four hours was kindly examined by Dr Noël Paton at the College of Physicians' Laboratory. Amount, 1500 c. cm.; sp. gr. 1020; reaction acid; boiling gave no cloud; picric acid and nitric acid gave faint cloud = albumose; with nitric acid marked pink colour, probably straboxylsulphate of potassium; no reduction of Fehling's solution; urea, 1·2 per cent.; the distillate did not smell of paraldehyde. Although he was a voluntary patient, he was anxious to do much as he liked, and was not easily persuaded to do what was considered for his good. He brought with him a bottle of paraldehyde, and would hardly give it up. He begged to be allowed paraldehyde at night, and not any other drug, as had been suggested. He expressed discontent at many of the arrangements made for him. His wife had waited on him hand and foot, and he no doubt missed her constant care and attention. He expressed much discontent with his room and his bed, and said he had expected greater comfort, and greater care and attention shown him. At 11 P.M., at his urgent request, and after having had some warm milk, he was allowed ʒvj. paraldehyde in ℥iij. of cinnamon water, and emulsified by tincture of quillaya.

November 24.—Slept five hours, and took a fair breakfast. At the visit he was sitting up, looking very depressed and discontented. It was very difficult to pacify him, and to impress upon him the importance of obeying orders for his own good. He complained that too much paraldehyde was allowed him the previous night, and said the only effect it produced was "drunkenness" for five hours. His pulse intermitted every 4–7 beats. At night he got ʒiv. paraldehyde. M. T., 98° F.; E. T., 99° F.

November 25.—He slept none. He was very restless and unreasonable, refusing to keep his bed or sit quietly in a chair. After a visit from his wife, however, he became more settled, and went to bed. The pulse was much steadier than on the previous day, although still frequently intermitting. M. T., 98°·4 F.; E. T., 98°·8 F. Had ʒiv. paraldehyde.

November 26.—He slept for one and a half hours. During the day he took food well, but was restless and not easily managed by the nurse. He would get up and walk about the room in his nightshirt. In the evening, at the visit, his pulse was 96, not so strong, more irregular, and intermitting every twentieth beat. He was more nervous and frightened about himself. He asked the writer anxiously if the medicine were not poisoned. He was quite conscious that he had hallucinations of sight and delusions. He said he saw "strange beasts" about the room, and had "strange fancies." He was then, however, easily pacified. At night he refused his draught, and became greatly excited, under the belief that he was being poisoned. When seen he was very restless, getting up out of bed and trying to put his clothes on to leave the Asylum at once, in spite of the hour and of his weak state. Mentally he was very confused and delusional. He said that his milk was drugged with laudanum, that he heard his death would appear in to-morrow's paper, that his wife had said she wished he were dead. He evidently had hallucinations of hearing. Finally, he declared he would be poisoned no longer by us, and he upbraided the doctors for giving him paraldehyde when he had come to be cured of the habit.

November 27.—In spite of the previous night's excitement, he slept one and a half hours. On awaking he was more composed, though still very nervous. At the visit he asked to be pardoned for his conduct, though he still seemed to partly believe the delusions of the previous night. His mental condition was very strange and contradictory. At times he was most anxious to do all he could to help in his recovery, and promised to obey all orders; and then in a few minutes his delusions and hallucinations had got the better of him, and he obeyed them. He would not go to bed, but sat fairly quiet in an arm-chair. The pulse was still very bad, and intermitted every 10–12 beats. Had no hypnotic.

November 28.—He slept none. In the morning he was very tremulous, agitated, delusional, and restless. He constantly walked about the room, and would not rest in any way. He said there was a woman in his bed, and that he could not get back there in consequence; he thought people were tormenting him; he said the doctors were poisoning him, and meant to kill him; he constantly thought the house was on fire. In a very shaky hand he signed the necessary document giving notice as a voluntary patient that he intended to leave the Asylum in three days, and in a few minutes after he had forgotten all about the matter, and asserted that he had lived in the Institution a year. That night he became utterly confused in his mind, and at times was incoherent in speech. E. T., 99° F.; pulse, 90, soft, and intermitted every 18–20 beats. Refused all medicine.

November 29.—He slept none all night, and was very restless and excited, hammering at his door and shouting. When up he tended to unbutton his clothes and to strip them off. He was seen by his wife and his own doctor, and they decided to have him certified, as his state, mental and bodily, prevented removal, and his being a voluntary patient had interfered with his proper treatment. In the evening he settled down once more, and went to bed.

November 30.—He slept one hour without any hypnotic, and was quiet the rest of the night. He was more composed in the morning, anxious to continue the medicines he had been ordered, and wishing to stay. The tremors and agitation both were less marked. He seemed almost entirely to have forgotten the occurrences of the previous day.

December 1.—He slept one hour. He was more agitated and restless, and the nurse had great difficulty in keeping him in bed. He was full of suspicions and delusions, such as of impending harm to himself. He refused all medicine, but at night was persuaded to take some tea, in which was gr. xv. of sulphonal.

December 2.—From his own account, this was the most comfortable night he had spent since admission, and he slept three hours. During the day he was fairly quiet, although delusional when talked to; yet he did not seem to believe his delusions so firmly. He had gr. xv. of sulphonal in his soup at dinner, and slept one hour in the afternoon. At tea-time he had another gr. xv. The pulse had now ceased to intermit.

December 3.—He slept six hours, but said he had had bad dreams. After a good breakfast he again fell asleep. After this date he made a gradual recovery, getting sleep with smaller and smaller doses of sulphonal, taking food well, enjoying short walks, and rapidly gaining in flesh.

December 19.—The weight was now 10 st. 4 lbs. He had gained 2 st. 4 lbs. in the twenty-six days since admission.

December 22.—Was still just a little suspicious and discontented. He complained that just when he was going off to sleep he had strange sensations going down his arms to his hands. These sensations, he said, were most in the palmar surface of the hands, where there was slight Dupuytren's contracture.

February 21.—Since the beginning of the year he had been nearly well. He had full parole of the grounds. His weight was now 11 st., and his bodily health good. He generally slept well without any hypnotic, but a night or two every week he slept only about three or four hours. He was anxious to get back to work, and after promising not to take paraldehyde again, he was discharged.

Notes upon the Case.

It will be noticed that many of the bodily and mental symptoms related above, with some notable exceptions, such as the extreme emaciation, the marked effect upon the heart's action, and the abnormally large appetite, are similar to those found in *delirium tremens;* and from the chemical relationship of alcohol and paraldehyde, this is what one might expect.

Not knowing what might be the effect upon such a weak subject, after such long use, of suddenly stopping the drug, it was intended to diminish the dose gradually, but the patient's mental condition prevented this arrangement from being carried out. It is possible that the more acute mental condition after admission to the Asylum may have been due to the sudden deprivation of the long-used hypnotic. It is doubtful, in the treatment, how much credit should be given to the sulphonal, for it may be that a crisis was just about to take place when the drug was prescribed.

Summary of Symptoms.

General Symptoms.—Great emaciation; anæmia; slight rise of temperature in the evenings.

Circulatory System.—Heart's action weak and irregular; pulse intermittent and soft; palpitation.

Alimentary System.—Stomach derangement, especially flatulence; costiveness; boulimia.

Respiratory System.—Breath smelt of paraldehyde.

Nervous System.—1. Motor symptoms: General muscular weakness; general tremulousness, especially in tongue, facial muscles, and hands; gait feeble and unsteady; general restlessness. 2. Sensory symptoms: "Strange feelings" running through body. 3. Mental symptoms: Insomnia; great mental anxiety and agitation; discontent; unreasonableness; mental confusion; mental excitement; temporary loss of memory and incoherence of speech; shouting; tendency to strip himself; hallucinations of sight (he saw "strange beasts"); hallucinations of hearing (he heard his death would appear in to-morrow's paper, he heard his wife had said she wished he were dead); delusions (that he was being poisoned, that his milk was drugged with laudanum, that a woman was in his bed, preventing him from occupying it; that people were tormenting him, that the doctors meant to kill him, that the house was on fire, that harm was about to happen to him). It will be noticed that the hallucinations of sight and hearing, and the delusions, were all of an unpleasant kind.

Length of Time under Treatment.—About three months.

Result.—Recovery.

IX.—SOME PRACTICAL RESULTS FROM THE CHEMICAL EXAMINATION OF THE CONTENTS OF THE HEALTHY STOMACH.

By ALEX. LOCKHART GILLESPIE, M.D., F.R.C.P. Ed., Medical Registrar, Edinburgh Royal Infirmary.

(From the Laboratory of the Royal College of Physicians, Edinburgh.)

(*Read before the Medico-Chirurgical Society of Edinburgh on 18th January* 1893.)

IN the *Edinburgh Medical Journal* for 1871 you will find some notes on a case of dyspepsia, in which Dr Affleck washed out the stomach. This, I believe, was the first introduction of Kussmaul's procedure in Great Britain. Since then the stomach-tube—then a pump, now a siphon—has effected a revolution in our treatment of gastric disorders. For even if a practitioner does not personally use it, vicariously his knowledge of such maladies has largely increased. The stomach-tube is in some cases curative, in many palliative, in most educational. To-night it will be chiefly educational; and if the following paper appears to be of a too experimental and too little clinical character, it is only because I consider the experimental part the more important, and not because of any lack of available clinical material.

With regard to methods, this is not, I am afraid, the place to introduce a discussion on their relative merit or value,—a milligramme is of importance in the laboratory, many milligrammes are required to be of service in practice. I need only say that the presence of hydrochloric acid combined with proteids in the stomach is very generally conceded by observers, whatever the method be that is employed to detect it.

While experimenting on the resistance of certain micro-organisms to acids, I had occasion to use a dialyser, in which I placed nutrient material with solutions of hydrochloric acid of various strengths outside. I was at once struck with the fact that the fluid inside rapidly became more acid than that outside, while at the same time the acid solution inside did not affect micro-organisms so deleteriously as a solution of pure hydrochloric acid of similar strength. On further investigation it appeared that the hydrochloric acid, which was used outside, on dialysing through, seized hold of the proteids in solution, combining with them to form some definite chemical body, and that this body was of the nature of a compound acid. And again, although this compound acid had almost, if not absolutely, the same acid equivalent as pure hydrochloric acid, with regard at least to its action on phenol-phthalein, its presence inside the dialysing-tube did not prevent more free hydrochloric acid from coming through. Shortly after noticing this fact, I found that Hayem and Winter, in their book *Du Chimisme Stomacale*, had worked at the same matter, especially with regard to human peptic digestion; and that Ch. Richet, Villejean, Moritz, Van der Velden, Cahn and Mering, and Ewald had noticed that the presence of albuminoids neutralizes or masks the reactions of free hydrochloric acid in a solution.

The sequel will show that this faculty of hydrochloric acid for combining with proteids is valuable, both with regard to their digestion and to the carrying out of other processes in the stomach. Some experiments made on artificial digestion must first be recorded.

All digestion experiments performed in flasks are erroneous. If a dialyser be used with a solution of hydrochloric acid outside, of a suitable strength, not only will digestion go on more quickly, as Sheridan Lea has pointed out, but just as much hydrochloric acid will be taken up by the proteids as is required for their digestion. Lea, in his paper on digestion in dialysers, lays too much stress, I believe, on the mere mechanical diffusion of the peptones as they are formed, and too little on the constant diffusion of the alkali (for he experimented with pancreatic digestion), and the consequent presence continually of fresh alkali in the fluid inside the dialyser. In artificial peptic digestion, at least, if there is a highly albuminous material to digest in a flask, and a strong solution of hydrochloric acid be added, the action of the pepsine is hindered, while if a weak solution be used, there is probably not sufficient acid present to satisfy all the affinities of the proteids, and digestion is not complete. Digestion in a dialyser is exemplified by the following experiments:—

EXPERIMENT I.—Some beef broth, with gelatine added, was placed in the tube of a dialyser, the contents being fairly concentrated. A solution of HCl was poured round it. It will be noted in the tables (Tables I. and II.) that in an hour and a quarter the acidity rose from neutrality or slight alkalinity to more than five times the acidity outside, and in two hours and a quarter to nearly seven times as much. In twenty-four hours the acidity inside had fallen to a little less than twice that outside. The acidity outside during the experiment was ·036 per cent. The experiment was

TABLE I.

Hour	0	1¼	2¼	24
Acidity per cent. inside, . .	...	·216	·324	·108
Acidity per cent. outside, . .	·036	·04	·063	·069
Free HCl, ...	—	+	+	+

TABLE II.

Hour	0	1	2	3	24
Acidity per cent. inside, .	·018	·252	·288	·27	·234
Acidity per cent. outside,	·198	·198	·199	·199	·21
Free HCl, . . .	—	+	+	+	+

repeated with an acidity outside of ·198 per cent. hydrochloric acid. The acidity rose in the first hour to ·252 per cent., in two hours to ·28 per cent., and then fell. It will be noted that with very similar contents, but with very different acidities outside, the acidity inside rose to almost the same height. The next experiment, which is shown in Chart I., illustrates this point more clearly.

EXPERIMENT II.—Using a dialyser as before, I placed 100 ccs. of a mixture of milk and water—one-third milk and two-thirds distilled water—in the tube, and poured round it 3000 ccs. of a ·126 per cent. solution of hydrochloric acid of a temperature of 100° F. The whole was kept at this temperature, a small quantity of pepsine being added to the fluid inside. I repeated this experiment in exactly the same manner with half milk and half water, and again with pure milk inside the tube. The acidity in each case was estimated every quarter of an hour during the first hour, then every half-hour to the second hour, and at the fourth, fifth, and twenty-fourth hours. It is obvious from the chart that the course of the acidity inside, in each of the experiments, varies with the contents,—not solely, however, because of the law of osmosis, that the fluid of greater density attracts more of the lighter fluid; for if that only occurred here, the percentage of acid present inside would not rise above that outside. Another point seen is the rapidity with which hydrochloric acid dialyses through, and that it begins to do so at once, a point in which, I believe, it resembles Nature, and which I hope to prove below. The period at which the hydrochloric acid makes its appearance is, therefore, very instructive, being proportionately later the stronger the milk solution. In Nos. I. and III. there was a small quantity of free acid, not hydrochloric acid, driven off at first. The chlorine was estimated in each, but as the chlorine curves followed the acidity curves very closely, I have not added them to the chart. Another point which we may notice is that in the more dilute specimens the free acid at the end of the experiment is considerably greater in quantity than in the more concentrated. The fall in the free acid curve in No. III. of the series is unusual, and is either due to an error in observation at the fourth hour, or to a loss in specific gravity of the fluid inside from dialysis of peptones, leading to a diminished inflow of hydrochloric acid.

CHART I.

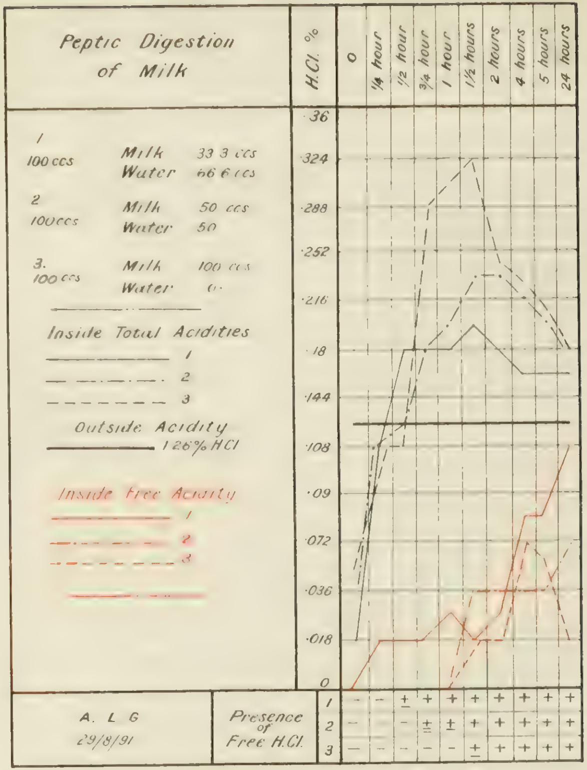
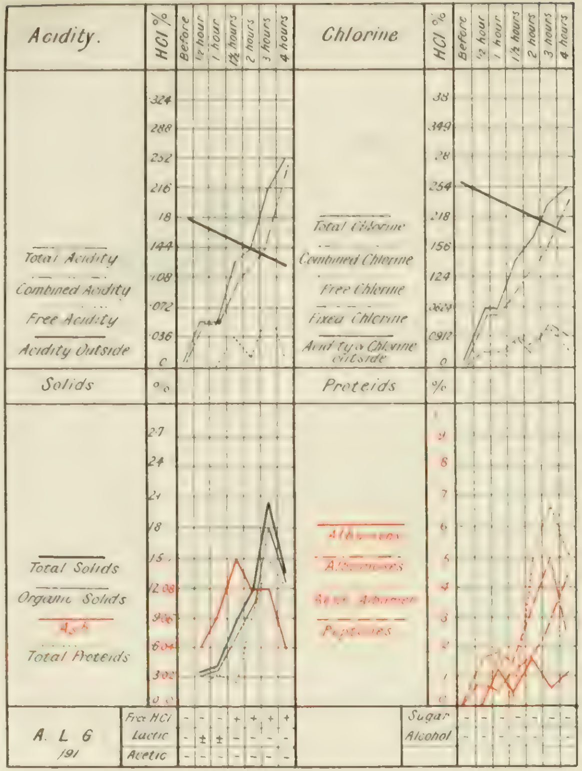


CHART II.

Artificial Digestion of Proteids.



If one considers, with Foster, that milk contains, when fresh 4 per cent. of proteid, or with König 3·4 per cent., the proportions of acid to proteids are as follows at the one and a half hours, when the acidities were highest:—

	Acid as HCl.	Per cent. (Foster.)	Per cent. (König.)
1.	·198 gr.	14·8	17·5
2.	·234 gr.	11·7	13·7
3.	·324 gr.	8·1	9·55

But these numbers can only be approximate, for by an hour and a half the 100 ccs. inside had become several ccs. larger in quantity. Nos. II. and III. being more concentrated originally, attracted a greater quantity of water from outside, while less dialysed through in No. I. And again, by this time some of the proteid had become peptone, part of which had dialysed out, and necessarily affected the above proportions. However that may be, there is sufficient evidence from these experiments to prove that the larger the amount of hydrochloric acid present, as compared with the amount of proteid, the more of it combines. And as hydrochloric acid combines with proteids before digesting them, the amount of combined acidity serves as a guide in estimating the digestive power of the gastric juice, artificial or natural.

Experiment III.—In this experiment Nature was simulated as far as was possible, excepting the fact that the tubes in the dialyser were not kept moving. It was performed in the hope of obtaining an idea of the course of digestion of meat alone in an artificial digestion apparatus, and of enabling comparisons to be made between it and similar experiments on the digestive processes in man.

The apparatus used was as before, except that as the meal to be digested was a large one, six parchment tubes were used and three beakers, two tubes in each beaker, surrounded by 1000 ccs. of hydrochloric acid solution. As the experiment proceeded, at each time the contents were to be analysed a tube was removed and its contents tested. One tube was taken out of each beaker successively, and then the remaining one from each. The acidity of the fluid in the beakers and round the tubes was tested on each of these occasions.

The material to be digested was prepared as follows:—A large quantity of fibrin, sheep's heart, chopped into very small pieces, and some pieces of white of egg, boiled and cut into small cubes, was placed in a flask with 550 ccs. of water, boiled and cooled. When cool 20 ccs. of saliva were added to it, and the mixture kept at 40° C. for one hour. The water was then strained off, and the solids divided into six different parts of the same weight, approximately, each, and the water which they had been boiled in was added to each part up to the 70 cc. mark. Each parchment tube then was filled with the 70 c. cms. of material and placed in a beaker.

A small quantity was filtered and tested. It had an acidity of ·009 per cent. hydrochloric acid, with no free acid, and contained a trace of chlorine. The solution outside was made up of a ·18 per cent. solution of hydrochloric acid in water, the total chlorine ·1872 per cent.; and as usual it was warmed up to the temperature of the body before the dialysing tubes were put in.

It will be seen from Chart II., which is only an amplification of the previous one, that the acidity rises quickly, and at the second hour exceeds that outside; but that it does not rise so quickly as in the case of the milk, the proteids not being so finely divided, and therefore more difficult to digest. Free hydrochloric acid does not appear until one and a half hours after digestion has commenced, and never rises above ·04 per cent., the free acidity rising in the third hour to ·072 per cent. The material used inside being difficult to digest, and the experiment only lasting four hours, the acidity was highest at the fourth hour, though probably it would have fallen by the next hour if the experiment had been continued, as the total solids had begun to decrease. The right half of the chart is devoted to—above, the chlorine; below, the various proteids. The chlorine curves follow very closely the acid curves, the free hydrochloric acid being only slightly less than the total free acid; that is to say, that there is only a trace of organic acid present. The fixed chlorine rises from the beginning, and reaches ·042 per cent. It may either come from the chlorides in the meat, or from the action of the hydrochloric acid on the other salts.

On turning to the table of the total solids, it will be seen that they are most at the third hour in the filtered contents, and then fall considerably—from 2 per cent. to 1·4 per cent.—at the fourth hour. On the other hand, the inorganic salts are most at the hour and a half, though containing most chlorine at the third hour. They rise rapidly at the beginning, but fall almost as quickly at the end. Subtracting the ash from the total solids, the amount of the organic solids is obtained: it naturally corresponds very closely in amount to that of the total solids. The dotted black line drawn in this division indicates the total amount of proteids; it follows very closely the total organic solids. The total proteids are entered in this division for comparison, and because the division devoted to the individual proteids is not sufficiently large to include them. The fall in the amount of total proteids recovered at the first hour cannot be satisfactorily accounted for, but it is slight, and may be due to an error in working.

The fourth table, or the separation of the proteids into their four chief divisions, shows a fairly constant quantity of serum albumen and globulin, a greatly increasing quantity of acid albumen, in which the artificial digestion differs considerably from Nature, while the amounts of albumose and peptone present rise more gradually and regularly.

On comparing the total acidity curve, or better, the combined acidity curve, with that of the total proteids, it will be noted that they have a considerable similarity until after the third hour, when the proteid line falls a little, the acid line still rising. This may be attributed to the increased amount of peptones and albumoses, which form the most of the proteids present in the fourth hour, as I believe that these proteids take up more hydrochloric acid than the albumens that go before them in the proteid series.

It is very doubtful if there really was any lactic acid present during this experiment. The reaction with Uffelmann's reagent was very faint, and I am inclined to think with Rothschild that with a purely flesh diet the amount of lactic acid formed is very small, although, if there be carbohydrates along with the proteid, lactic acid fermentation set up by them may possibly influence the proteid, especially if it be in the form of myosin, and give rise to more sarcolactic acid than the proteid by itself could have done.

There was no sugar, alcohol, or acetic acid discoverable in the contents at any time. Von Jaksch recommends that, in testing the contents of the stomach, the acidity, etc., should be calculated from the unfiltered as well as the filtered fluid, and it may be readily conceived that the unfiltered contents may now be more acid, now less so than the filtered,—as the undissolved proteid is greater than the dissolved, or as the undissolved material contains much carbohydrate material.

In this experiment, therefore, and in several of those to follow, the fluid was tested under both conditions. The previous charts and remarks refer to the filtered contents. It was hardly necessary in this case, with no knowledge of the exact amount of solid material at the commencement, to estimate the total unfiltered solids, ash, etc., nor could the proteids be calculated with any accuracy. The acidities were in nearly every case either equal to or higher than those in the filtered half,—the chlorine curves, of course, taking much the same direction. For instance, the total acidity at the six periods of the experiment in the filtered were ·054, ·054, ·126, ·144, ·216, ·252 ; in the unfiltered, ·072, ·072, ·126, ·162, ·216, ·27 ; while the combined acidity kept much the same proportion : filtered, ·054, ·054, ·09, ·126, ·234 ; unfiltered, ·072, ·072, ·126, ·144, ·162, ·144,—falling below the filtered, however, in the last hour. This is due probably to much of the proteid being dissolved, and the indigestible matter left.

The free acidity is almost the same,—a slight increase here, a slight decrease there.

Experiment IV.—Noting, then, the result of digestion of almost pure proteid, I next performed a very similar experiment on *an almost pure carbohydrate.* I used potatoes for this, boiling a considerable number in an equal quantity of water, after having washed them. I made, in fact, a thick potato soup. On testing this I found that it had an acidity of ·054 per cent. HCl, and contained ·0468 per cent. chlorine.

Some of this mixture was placed inside the dialyser tube, and outside it 180 ccs. of a hydrochloric acid solution ·324 per cent., chlorine ·324 per cent. A small quantity of pepsine was added to the potato.

TABLE III.

Hour	0	3	24
Total acidity per cent. inside, ...	·054	·234	·252
Combined acidity, . .	·054	·09	·108
Free acidity, . . .	...	·144	·144
Acidity per cent. outside, .	·324	·216	·234

From this table (Table III.) it will be seen that though the acidity inside rapidly increases during the first three hours, it rises very little above that outside. At the end of the twenty-four hours the proportion is still much the same. The course of the combined acidity is very striking when compared with those in the former experiment; it only reaches ·108 per cent. The free acid, on the other hand, rises more rapidly to ·144 per cent., and remains there It is therefore in greater quantity than the combined acid, the reverse of the previous experiments.

The fluid inside, at the end of the experiment, gave no biuret reaction, but reduced Fehling's solution, gave the tests for free hydrochloric acid, and coloured iodine and iodide of potash solution violet, showing the presence of starch and erythrodextrine.

Outside, the fluid reduced Fehling, gave the tests for free hydrochloric acid, biuret reaction doubtful, no starch.

On examining the proportion of chlorine inside and out, both at the third hour and after twenty-four hours, it was only slightly greater inside than outside. At the third hour—inside ·234 per cent., outside ·1716 per cent.; at the twenty-fourth hour, inside ·312 per cent., outside ·2796 per cent. The apparent discrepancy in the total quantity of chlorine is due to the evaporation of the fluids, the total at the end being 81 ccs. inside, 166 ccs. out. The total amount of chlorine at the beginning being ·686944 gr., at the end ·717 gr., an error of ·03 gr. in the working,—an error which I find almost constantly in working out chlorine results. This is due probably to the addition of a drop or two too much silver solution to make sure that the change of colour is permanent. This is especially the case when the fluid has contained free hydrochloric acid, for the colour produced by that acid on the proteids when the fluid is dried obscures the end of the reaction. This is also a source of some uncertainty as to the end of the reaction in testing the acidity with phenol-phthalein. In both cases considerable dilution with distilled water is advisable, and, in estimating the acidity, a larger quantity of phenol-phthalein than usual.

For this reason, again, no colour which changes its shade on transition from acid to alkali can be used with any accuracy at all. One which is colourless with the one and coloured with the other is requisite.

(*To be continued.*)

Part Second.

REVIEWS.

A Text-Book of the Theory and Practice of Medicine by American Teachers. Edited by WILLIAM PEPPER, M.D., LL.D., Provost, and Professor of the Theory and Practice of Medicine, and of Clinical Medicine, in the University of Pennsylvania. In Two Volumes. Illustrated. Vol. I. Philadelphia: W. B. Saunders: 1893.

THIS magnificent volume is the first instalment of what may be looked on as an authoritative presentment of the "best teaching of the science and art of medicine at the present time" in America. The subjects are all treated practically, and as wide a view taken of them as possible. The writers are men whose names are almost as well known here as in America. John S. Billings, William Osler, Gilman Thomson, J. T. Whittaker, Horatio C. Wood, contribute to the first volume, in addition to the editor himself.

After a chapter devoted to a general consideration of hygiene, the different infective diseases are described, followed by essays on the disorders of the nervous and muscular systems. The opening chapter, on Hygiene, by John S. Billings, is well worthy of its author. It covers most of the ground included in our term "public health" in necessarily a somewhat cursory, though highly interesting manner. In the brief notice of the normal expectation of life no mention is made of the different methods or plans of estimating the "shortening" which may be expected to occur in disease,—in fact, of the principles of life assurance. Assurance is now becoming of such vast importance that it really seems worth the while of editors of such books as this to include among their pages some remarks on the subject from an acknowledged authority. At present a sort of happy-go-lucky personal equation has to suffice in determining the proper procedure in a case of any difficulty among those general practitioners who may have to do such work. Valuable hints are given in this chapter as to the best way to disinfect clothes and to sterilize discharges.

A consideration of the different fevers follows. Each fever is described in a separate chapter. The duty of discussing typhoid fever and its allies falls on Dr William Pepper, while the acute zymotic disorders are well taken care of by Dr Whittaker. Indeed, the latter's "Vaccination" ought to convince the most bigoted anti-vaccinator of the errors of his ways. Little need be said on the mode of description of these diseases, or on the facts contained in that description. The antiseptic treatment of typhoid fever comes in for some rough handling, while Brand's water cure is much praised. What a pity it is that Brand's method is so impracticable in private practice.

Tuberculosis and syphilis in their protean forms are very fully treated of by Dr W. Gilman Thompson, who also supplies chapters on yellow fever, cholera, and malaria. Dr Whittaker describes anthrax, hydrophobia, actinomycosis, trichinosis, and glanders. This part of the book is furnished with several illustrations of a high order of merit. The coloured drawing of actinomycosis stained by Gram's method, however, is somewhat diagrammatic.

The consideration of these diseases takes up the first part of the volume; the latter half is devoted to nervous diseases. Dr Wood has been entrusted with much of this task, and contributes, in the first place, a short chapter on the general symptomatology of diseases of the nervous system. It is all too short. The same authority is responsible for an able exposition of the mental diseases. The American names for some of these maladies sound rather strange in our ears,—as, for instance, chronic periencephalitis for our simple G.P. His general arrangement, however, seems very good,—I. Organic Insanities; II. Constitutional Insanities; III. Pure Insanities. The names explain themselves,—alcoholic and other toxæmic forms being included in the second class. The type of moral insanity termed in America Paranoia is fully described, and the narrow distinction between it and eccentricity skilfully touched on. Paranoia, according to Dr Wood, is simply intense egotism—a morbidly magnified *Ich.*

The same author contributes the chapters on the functional nervous diseases, while the task of detailing the organic diseases of the brain has been entrusted to Dr Osler. Dr Wood undertakes the description of the organic diseases of the spinal cord, and Dr Osler those of the nerves and of the vaso-motor and trophic systems. The essays on these subjects are eminently readable, though concise; and sufficient attention has been paid to methods of localization, in addition to the ordinary description of the diseases. The remarks on aphasia in its different forms might have been a little extended with advantage, but the short account given is quite clear.

In general form the book is bulky, but excellently got up, and the price is not extravagant. As in most American books, however, the proof-reading has been carelessly performed. A trusty counsellor for the practitioner or senior student, on which he may implicitly rely, Dr Pepper's new venture deserves to succeed.

Physiologie. Travaux du Laboratoire de M. CHARLES RICHET, Professeur à la Faculté de Médecine de Paris. Tome Deuxième, Chimie Physiologique—Toxicologie. Paris: Ancienne Librairie Germer, Baillière et Cie. Félix Alcan, Éditeur, 108 Boulevard Saint-Germain. 1893.

THIS is the second volume of Reports, similar to those issued from the Laboratory of the Royal College of Physicians, Edinburgh, which has appeared from the laboratory of that indefatigable worker M. Charles Richet. Some of the twenty papers are of considerable value, and well worth summarizing. For instance, M. Pachon has been diligently inquiring into the relations of the brain and respiration, chiefly by means of experiments on pigeons, rabbits, and dogs. Destruction of the cerebrum slows the respiratory rate, due to the suppression of a function normally exercised by that part of the brain, as shown by the reflex power still existing in the excito-motor respiratory centres. The stimulation of the corpora quadrigemina with electricity arrests respiration, the arrest lasting a little longer than the stimulation. The destruction of these bodies is followed by a very marked acceleration of breathing. Compression of the brain as a whole is followed by arrest, then by a gradual return to the normal. Proceeding to test the effect of morphine, he found that for the first twenty minutes after injection the respirations were increased in number, after that much diminished, while the type becomes distinctly periodic. "A study of the respiratory effects of morphine is a study of respiration deprived of the normal stimulation of the cerebrum."

In some experimental researches into the functions of the suprarenal capsules in frogs, MM. J. E. Abelous and P. Langlois find that ablation of both capsules is invariably and speedily fatal. The extirpation of one gives rise to no symptoms, while the insertion in the dorsal lymph sac of the capsules of another frog, after removal of both, prolongs life very considerably. Injection of the watery extract of suprarenal capsules does not, however, produce the same effect. Death is always preceded by paralysis. The authors conclude that extirpation of the two capsules causes an accumulation of a toxic substance with an action similar to that of curare. After a further similar research on guinea-pigs, the authors conclude that the adrenals elaborate substances which are able to modify, neutralize, or destroy poisons formed in the tissues during muscular work, and which accumulate in the body if these glands be destroyed.

Another interesting paper by M. Charles Richet is too long for us to notice further than to give the conclusions arrived at. The subject at issue is the relative toxicity of the different alkaline metals, and the mode of investigation comprised the longevity of fishes in solutions, and of other animals after injections of their various salts. The author concludes that their toxic actions correspond to their chemical value. They follow the same laws. The fatal doses of these substances which act on the same anatomical elements in the body are proportioned, not to their absolute but to their molecular weight.

M. Joseph Roux details some experiments into the elimination of iodides, and concludes that iodide of potassium appears in the urine two to three minutes after injection of the salt into a serous cavity, or even after ingestion by the mouth. This elimination lasts normally for thirty-six hours after moderate doses, or, after large or repeated doses, for eleven days. Iodide of potassium is not fixed in the kidney tissue in a stable condition, but, nevertheless, it is partly localized in that organ, for the kidney contains more than five times as much iodide as the blood or the muscles, and these three times more than the brain. The urine holds ten times as much iodide in solution as the blood. Quinine sulphate is eliminated in about forty-eight hours, commencing in the course of the first half hour after the dose.

Some other interesting papers there are in this volume bearing on similar subjects. We must refer our readers to them.

Clinical Diagnosis; the Bacteriological, Chemical, and Microscopical Evidence of Disease. By Dr RUDOLF V. JAKSCH, Professor of Special Pathology and Therapeutics in the German University of Prague. Translated from the Third German Edition and Enlarged by JAMES CAGNEY, M.A., M.D., M.R.C.P. London: Charles Griffin & Co., Limited: 1893.

THE appearance of a second edition of the English translation of Professor van Jaksch's *Clinical Diagnosis*, taken from the third German edition, indicates that the book has been received with widespread favour. Nor is this surprising, for the book stands alone as the only complete exposition of the application of recent methods in chemistry, bacteriology, and microscopy to clinical medicine. Dr Cagney has not only translated the work, but he has added very materially to it. Indeed, his additions are sometimes as important to English readers as the text itself.

The second edition is very considerably larger than the first. In illustration of this we need only point to the increase in the number of references, so eloquent of the ardour of modern observers. For instance, in the first edition there were 415 references given in the chapter devoted to the consideration of the urine, in the second that number has increased to 597. There is a proportional increase throughout. One drawback to the volume is that the index has not been compiled carefully enough,—that is to say, that several of the numbers given are inaccurate.

With regard to the subject-matter little need, or, indeed, can be said. Throughout, the description of processes is written in the manner of one who has performed them himself, and is thoroughly conversant with the difficulties and fallacies attendant on each. In such a book this is a great matter, for frequently we have found mistakes in methods perpetuated through a series of books owing to the authors simply copying the description instead of practising the method themselves. It is curious, perhaps, that Dr Cagney has been left to describe Gowers' hæmacytometer, so largely used in this country. With regard to the presence of serum-globulin in the urine, also, the translator's notes are as valuable as the author's. Curiously enough, no mention is made of Noël Paton and Byrom Bramwell's striking case of globulinuria in this connexion.

The illustrations, many of them printed in colours, are very good throughout,—especially, however, those depicting the various morbid appearances of the blood corpuscles.

One or two mistakes in the subject-matter are to be found,—as, for instance, on page 256 the precipitate thrown down by the addition of nitric acid to an albuminous urine is said to be *acid-albumin*. If this term is meant to indicate a combination of the acid to albumin, confusion will arise between it and the true acid-albumin, but a few lines further down the same name is applied to the soluble form.

Metatarsalgia (*Morton's Painful Affection of the Foot*). By THOMAS S. K. MORTON, M.D., Philadelphia.

THIS pamphlet is a reprint from the Transactions of the Philadelphia Academy of Surgery. Dr Morton gives an account of a painful condition most frequently affecting the fourth metatarso-phalangeal articulation. It is caused by tight or badly-fitting boots *plus* some strain, bruise, or other injury. In slight and recent cases relief is obtained by rest and properly fitted boots. In aggravated cases the author recommends excision of the articulation. We would suggest amputation of the toe as a simpler and quite as efficacious method of treatment.

The affection was first described in 1876 by Dr Thomas G. Morton of Philadelphia, who recommended the application of a soft roller bandage to the foot, so as to equalize the pressure throughout the foot in walking. He attributed the pain to compression of the fourth metatarso-phalangeal joint by the fifth joint, which lies somewhat behind it, and the third, which is a little in front of it. In this way the fourth joint seems to be taken at an unfair advantage, and the nerves irritated.

Dr Morton gives the histories of six cases in which he excised the fourth metatarso-phalangeal joint. In all the pain originated from an accident, and the patients (females) seemed to be highly neurotic. Complete cure resulted in every case.

Dr Morton describes in detail an admirable method of making a foot aseptic before an operation. The main point is staining the skin with permanganate of potash, and then removing all colour by oxalic acid and scrubbing.

Lehrbuch der Physiologischen Chemie mit Berücksichtigung der Pathologischen Verhältnisse, für Studierende und Aerzte. Von RICHARD NEUMEISTER, Dr. Med. et Phil., Privatdozent an der Universität Jena. Erster Theil. Die Ernährung. Jena: Verlag von Gustav Fischer: 1893.

THIS is the first volume of what promises to be an excellent text-book of physiological chemistry. The first part is devoted to a study of the problems connected with the nourishment of and metabolism in the body. The second part will be devoted to the chemistry of the tissues and fluids. In the present volume the author begins by a consideration of the relations between food and energy, both in plants and animals. He then proceeds to discuss the chemistry of the cell and the different "Nährungstoffe." In this section the description of the proteids is particularly minute and interesting. The ferments are now described, and the digestive processes dependent upon them. This naturally leads to a description of absorption and of the fate of the absorbed food stuffs. The last chapter is devoted to an analysis of the metabolism of the elements ingested, and its significance for the organism.

In his classification of proteids the author departs somewhat from that generally adopted in this country, but, we believe, adopts that taught by Hoppe-Seyler and his school. For instance, albumin which has been acted on by NaHO is termed *albuminat* or *alkali-albuminat;* but a solution of this in excess of acid is not termed acid-albumin, but a solution of *albuminat* in acid. Acid-albumin similarly is formed from albumin by the action of some acid, but is not soluble in excess of alkali. We are glad to see that the liver is given its proper function, although it is rather unkind of Dr Neumeister to describe our Professor of Physiology as an "old observer who deceived himself." A consideration of the iron problem will be found at the end of this volume.

Diagnostik der Bakterien des Wassers. Von Dr A. LUSTIG. Jena: Gustav Fischer: 1893.

EVERYONE working with micro-organisms, and especially a beginner, has great difficulty in ascertaining whether a germ which he has found is new to science or not. It is almost impossible for any one, save for a man who gives himself up entirely to research, to keep abreast with the rapidly-increasing number of known bacteria. Therefore the necessity that an investigator should be able to find out with the least trouble the characteristics of all previously described micro-organisms. Dr Lustig has provided a most valuable contribution with this object in view.

He has in the book before us dealt with the germs found in water, and given in tabular form a description of no less than 182 varieties. First the shape and arrangement of the micro-organism is described, then its movements, if any, then its method of growth upon plate cultures, then in gelatine, agar-agar, and upon potatoes. Next the effect of temperature on the growth of the germ is stated; reference is then made to spore formation. The action of reagents or stains is next stated; and, finally, the author makes any remarks which he thinks needful to aid the observer.

We have tested the author's accuracy repeatedly, and so far we have not found an error. The book, originally written in Italian, has been translated into German, and both in Germany and in Italy it has met with cordial appreciation. We have no doubt that an English translation would be welcomed by all workers in bacteriology.

Disinfectants and Antiseptics: How to use them. By EDWARD T. WILSON, M.B. Oxon., F.R.C.P. Lond. London: H. K. Lewis.

THIS is a useful card, but we confess that so many disinfectants are mentioned to choose from that to the lay mind the directions must be perplexing.

It is, we should suppose, however, intended for the use of the advanced student and medical practitioner, and for such it should prove a ready help. The great difficulty with regard to most of the so-called disinfectants is that they are highly poisonous. No doubt the author mentions this, but we think that now it should be a *sine quâ non* in the case of all disinfectants of a poisonous nature supplied to the public, that the bottles should be of such a construction as at once to attract attention, even when laid hold of in the dark.

In dealing with the fumigation of a room with sulphurous acid gas, saturation of the walls, floor, and ceiling with water is suggested as a useful adjunct to the action of the gas. It is unlikely that this will ever be done, and for obvious reasons we cannot recommend it.

Elementary Physiology for Students. By ALFRED T. SCHOFIELD, M.D., M.R.C.S., etc. London: Cassell & Co., Limited: 1892.

IT has frequently been our misfortune to have to notice small text-books of physiology, the circulation of which cannot but do an immense amount of harm by giving students imperfect and erroneous conceptions of the science. We have not met anything worse than this *Elementary Physiology for Students* by Dr Schofield.

To justify this statement it is only necessary to call attention to the two coloured Plates at the beginning of the book, showing the "comparative sizes of the various tissues and structures *uniformly magnified* to 80 diameters." Side by side are diagrams of "Bone Cells"—which, by the way, are not bone cells, but lacunæ—and of "Section of Bone." The lacunæ of the former are as large as the Haversian canal of the latter! In the next Plate we have, "uniformly magnified to 240 diameters," red corpuscles considerably larger than the peptic cells of the gastric glands.

But it is not in the illustrations alone that such glaring errors occur. On p. 46 the formula of Urea is given as CN_2H_4; on p. 77 it is stated that "Peptones are the only colloids which transude freely."

On p. 98 the liver cells are described as becoming "filled with *masses* of glycogen," and as absorbing peptones. On p. 17 we are told the precise number of atoms of the various elements which enter into the formation of the proteid molecule!

The author would have done well to bear in mind "these weighty words of Virchow" which he quotes in his preface: "Whoever speaks or writes for the public ought, in my opinion, doubly to examine just now how much of that which he says is objective truth." Had he done so he would have refrained from writing this book.

Drunkenness. By George R. Wilson, M.B., C.M. London: Swan Sonnenschein & Co.: 1893.

A year ago Dr Wilson gave a course of four lectures to the students of the Edinburgh Free Church College, and this volume is the outcome. The author seeks to present the student of social science with a study of drunkenness regarded as a nervous disease; he has, however, "no desire to explain away the drunkard's vice, or to take from its ethical significance." Much less does he desire to abate the necessary restrictions and penalties attaching to his habit. "If we can show that depraved character and perverted conduct are the outcome of self-imposed nervous impairment, we do not thereby establish a case for less rigorous treatment, but rather more."

On the whole we are favourably impressed by Dr Wilson's book; and although as time goes on he may, and probably will, modify some of his views, it is vastly superior to many or most of the popular books on the subject, and the author has done well to avoid the usual hackneyed exhibition of the drunkard as an "object-lesson and a warning." The chapters on the Physiology and Pathology of Drunkenness are clear and good, although we think that dipsomania might have had more space allotted to it, and have been explained more fully. The etiology of drunkenness is very well stated. The chapter on Therapeutics is conceived in a broad spirit;

it is valuable, and should do good. An account is given in it of the Gothenburg system, and of prohibition in Canada. The author's remarks upon the treatment of nervous children who might be expected to turn out drunkards are wise, and worthy of grave attention.

Alcohol and Public Health. By J. J. Ridge, M.D. Second Edition. London: H. K. Lewis: 1893.

This little book treats of the physiological action of alcohol and the evils attending its use. The author is a thorough-going teetotaller, and considers that the time has now arrived when alcohol should be restored to the shelves of the apothecary and prescribed and dispensed as opium and other poisons. He believes that "the mischievous notion ought to be dispelled that it is good for almost all diseases, and the means of preventing most. It is regarded as the best of all strengthening agents, and it is this notion which rivets the chain on the neck of the nation. The medical profession can do much to destroy this idea and restore true liberty."

The author has long had the conviction that, unless the practice of total abstinence is physiologically right, it cannot be morally binding upon all, and he seeks, with considerable success, to prove that total abstinence is physiologically right.

Outlines of Medical Jurisprudence for India. By Gribble and Hehir. Madras: Higginbotham & Co.: 1892.

The third edition of this volume is a great improvement upon the foregoing first and second editions. We can conscientiously recommend it, not only for those to whom it was originally addressed, but also to those who are intending to take up medical jurisprudence as a speciality in this country. It is well written, and it brings the necessary information into a good perspective.

Report of the Laoling Medical Mission for the year ending Feb. 29, 1892. Tientsin.

The beneficial influence of medical missionary enterprise is well illustrated by this report, which shows that much good work is being done at Laoling by Dr Shrubshall, one of the many men who gain their medical knowledge in Edinburgh and go abroad to use it. It is interesting to see how many operations have been performed which would not have been possible in China without such foreign aid, and there is no wonder that the Hospital and Dispensary are frequently crowded.

Dainty Dishes for the Sick-Room. By a Physician's Wife.
Glasgow: J. Calder & Co.

THE authoress's husband has found the recipes contained in this *brochure* useful in his practice, and she hopes that in their present form a larger circle may find them of service in the difficult task of tempting the appetite of the sick and convalescent. We think that her hope will be realized, as the recipes are good, and many of them new.

Practical Observations on the Harrogate Mineral Waters, and Chronic Diseases, with Cases. By A. S. MYRTLE, M.D., and J. A. MYRTLE, M.D. Fourth Edition. Harrogate: Robert Ackrill: 1893.

THIS *brochure* is published at an appropriate time. With the prospect of a cholera scare again this year, practitioners of medicine and their patients will be casting about for health resorts near home. It is perhaps well that this should be so, for we undoubtedly possess many valuable health resorts in Great Britain, and amongst them Harrogate takes a high rank. The authors of this book have brought it up to date, and show the value of the Harrogate waters in the treatment of dyspepsia, gout, rheumatism, neuralgia, various skin diseases, as well as anæmia and neurasthenia. The authors say that, as soon as the new suite of baths is completed, Harrogate will be, as far as its baths are concerned, unsurpassed, just as it is now unequalled as regards the number, variety, and strength of its springs. The Swedish movement system and massage are also carried on at the spa, so that physicians may with confidence recommend their patients for treatment there, if it is necessary to send them to a spa at all. The chapters on "jaded brains" are interesting and valuable.

Carlsbad; a Medico-Practical Guide. By EMILE KLEEN, M.D.
London and New York: The Knickerbocker Press: 1893.

THIS guide is worthy of the attention of those about to visit Carlsbad. The author states clearly what diseases are benefited and what not at Carlsbad, and the information regarding the regulations at the spa and the prices charged is valuable to intending patients.

Handbook to Arcachon. By the Rev. SAMUEL RADCLIFF. London:
T. Laurie: 1893.

THIS little book will be useful for any one visiting Arcachon, but the medical appendix is very sketchy.

Advice to intending Visitors to Cannes. By H. Blanc, M.D. London: J. & A. Churchill: 1893.

This attractively-produced volume professes to be "an impartial account of Cannes, of the diseases which are benefited and of those which are not improved by a residence there." It can be recommended as fulfilling the author's intention.

St Thomas's Hospital Reports. New Series. Edited by Dr Hadden and Mr Anderson. Vol. XX. London: J. & A. Churchill: 1892.

This volume begins with obituary notices of four of the older members of the Medical School. These are—Dr T. A. Barker, an Edinburgh graduate and a college friend of Charles Darwin; Sir J. Risdon Bennet, also an Edinburgh man and a friend of David Livingstone (although this is not mentioned here); Dr W. H. Stone, the well-known authority on Medical Electricity; and Dr Albert J. Bernays, the chemist.

Then follow seventeen original papers, seven reports from different Departments of the Hospital, and the Calendar and Prospectus of the School,—the whole making up a volume of great interest and value.

The first paper is one by Mr Le Gros Clark on "The Sources of Popular Fallacies, and their Influence on Education;" the "Specific Diseases considered with Reference to the Laws of Parasitism" form the subject of an important article by Dr J. F. Payne; and there is an interesting and suggestive abstract of an "Address on some Points of Science and Practice concerning Cancer" by Sir John Simon, with a "Short Note of the Reasons for considering Cancer to be a Micro-parasitic Disease" by Messrs Shattock and Ballance.

The Surgical Staff is represented by Mr William Anderson, who gives a "Clinical Lecture on some Recent Cases of Tubercular Disease of Bones and Joints in Adults;" Mr Bernard Pitts, who records "Some Cases of Removal of the Kidney for Chronic Disease," and some others; while Dr C. J. Cullingworth describes "Three Cases of Early Tubal Gestation successfully treated by Abdominal Section," two of the cases after, and one before, rupture of the tube.

To physicians the greatest interest of the volume is to be found in the admirable clinical papers of Drs Ord, Haddon, Mackenzie, Hawkins, and Seymour Sharkey. Dr Ord writes "On Certain Cardiac Symptoms observed in Cases of Gastric Ulcer." He describes the occurrence of symptoms of endo- and pericarditis, without pyrexia, in seventeen cases of gastric ulcer; and discusses their significance and the possibility of the gastric and cardiac lesions being both due to perverted pneumogastric influence.

Dr Haddon supplements his former papers in the *Lancet* by "A Second Series of Cases of Head-jerking in Children." He describes nine new cases of this interesting and not uncommon condition, and discusses its clinical features and relationships. Among other points, he draws attention to the frequent occurrence of passing fits of unconsciousness in infants suffering from this neurosis.

Dr Hector W. G. Mackenzie's paper "On Albuminuria and the Condition of the Knee-jerks during and after Diphtheria" is the outcome of an immense amount of work, and is an exceedingly valuable contribution to the subjects of which it treats.

Dr H. P. Hawkins, in an excellent paper "On Tubercular Peritonitis, its various Forms, their Surgical Treatment, and Comparative Curability," pronounces in favour of more frequent and earlier operation in suitable cases. He thinks, however, that the advantages of surgical procedure have been somewhat exaggerated, as so many cases recover without operation.

Dr Seymour J. Sharkey describes three cases of "Acute Primary Suppurative Cellulitis of the Neck," which he regards as instances of "Ludwig's Angina."

There are several other papers of gynæcological, surgical, and hygienic interest. The volume reflects great credit on the Editors and on the important School to which they belong.

Transactions of the American Pediatric Society. Vol. III. New York: Fairchild & Company: 1892.

The American Pediatric Society has on its roll the names of many men well known among us for good work done in general medicine, as well as in connexion with the diseases of children. This volume contains the papers read in the course of the last session, during which Dr T. M. Rotch of Boston has been President. It contains twenty-three papers, with the discussions which took place on them. After the President's opening address, there come five papers on different aspects of the diagnosis of pneumonia in children. These are by Drs T. S. Latimer, F. Forchheimer, William Osler, and L. Emmet Holt, and are of great interest. Among other contributions, there are two by Dr J. Lewis Smith on "How to Prevent Complications and Sequelæ in Scarlet Fever," and on "Scarlatinal Nephritis;" one "On the Association of Congenital Wryneck with Marked Facial Asymmetry," by Dr William Osler; one on "Gavage in the Treatment of Persistent Vomiting in Infants," by Dr C. G. Kerley; a "Further Report on Sub-membranous Local Treatment of Pharyngeal Diphtheria," by Dr A. Seibert; "A Case of Ulcerative Catarrhal Dysentery," by Dr W. D. Booker; and many others. Many of the discussions are most interesting, and enhance the value of the volume. The Society is to be congratulated on this excellent series of papers.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXII.—MEETING VII.

Wednesday, 5th April 1893.—Mr JOSEPH BELL, *President, in the Chair.*

I. EXHIBITION OF PATIENTS.

1. *Mr Cotterill* exhibited a PATIENT, a medical student, as an example of a very good recovery of function after a severe injury. Two years ago patient was out shooting in a boat. A gun was accidentally discharged about six inches from patient's body, and the charge penetrated the soft tissues of the right arm about the insertion of the deltoid. He was brought to hospital immediately afterwards, and came under Mr Cotterill's care. On slitting up the wound, which tunnelled right through the tissues of the deltoid, it was found that about two inches of the humerus were uncovered except by periosteum. About three inches of deltoid muscle and tendon had to be removed in their whole thickness, and the wound gaped widely. The prospect of recovery with a good arm seemed extremely bad, but nevertheless an absolutely perfect restoration of the function of the muscle had taken place. The injured arm was now as strong as the other.

2. *Dr Allan Jamieson* showed—(*a.*) A CASE OF PIGMENTATION DUE TO SCABIES, SIMULATING ADDISON'S DISEASE.—A. P., aged 27. Admitted into Ward 38, Royal Infirmary, 25th February 1893. She came from a country district, and stated that she had, when a child, an attack of fever, since when her skin has been darkish in tint, but on this point she is not very clear. For the last twelve months she has felt giddy at times, and has fainted once or twice. She has also experienced sensations of nausea occasionally. Her family history is good. In October last she began to suffer from an itchiness of the skin, which spread over the body, with the exception of the face, and which was worst at night. On admission she presented the ordinary symptoms of scabies *plus* intense pigmentation. Some epidermic scales were scraped from the sole, boiled in Liq. potassæ, and the sediment examined under the microscope. Acari scabiei, mature and immature, and ova were found. The scabies was treated by sulphur baths and the inunction of a naphthol paste, and under this medication was soon cured. The face, with exception of a slight degree of rosacea, presented a natural tint. All the rest of the body was more or less pigmented.

Over the abdomen and lower part of the back, the margins of the axillæ, and in the axillæ themselves, areolæ of the nipples, and on the feet and ankles, the hue was nearly black, fading off into a dusky brown on all the rest of the body. The surface was rained over with lighter dots, which resembled cicatrices, but which were not such. Were the face covered, she would have been taken for a person belonging to one of the dark races. The urine was normal. It was tested for melanin and melanogen in the Laboratory of the Royal College of Physicians, but these were absent. The blood was examined by Dr Crawford, and contained 1,960,000 red corpuscles, and two white in ten fields. She had a pulse of low tension, rate 80, cardiac sounds and impulse weak. The temperature rose some degrees at night on admission, in consequence of the irritation caused by the scabies, subsequently from abscesses. The pigmentation is steadily but surely fading. Dr Greenhow, in the *Clinical Society's Trans.*, vol. ix., has drawn attention to similar cases like this resembling Addison's disease, due to pediculosis; and a drawing representing one such, which came under my observation some time since, is here shown. These cases are rare in this country, but scabies as a cause is infinitely rarer. The only direct allusion to it which has come under my notice is one by Besnier and Doyon, in their annotations on Professor Kaposi's *Pathology and Treatment of Diseases of the Skin*, vol. ii. p. 889, where they refer to a "melanodermie acarienne" as occasionally met with in scabies of long duration, and in specially predisposed subjects. Greenhow's cases were all in elderly persons, which is against the diagnosis of Addison's disease, as it seldom occurs in those past middle life. In mine the symptoms and period of life were not incompatible with such a diagnosis, but there is little doubt that it belongs to the same class as his, a class to which he attaches the term "vagabond's disease," a designation quite inapplicable to my patient.

(*b.*) CONGENITAL MALFORMATION OF NAILS.—This young woman, aged 22 (for the opportunity of studying her interesting case I am indebted to Dr Milligan), presents an abnormality of the nails which supports the views expressed by Unna on the growth and development of the nail. It will be seen that in her case all the nails—least, perhaps, those of the thumb—seem to grow directly from the epidermis covering the dorsum of the finger,—the nail-fold, which covers in and protects the nail-plate behind the lunula, being absent. The transition is seen to be a fairly gradual one, the nail-plate at first being very thin and soft; though nearer the point of the finger it becomes considerably denser and harder, though tending to split longitudinally. The nail-plate grows from a band of formative tissue disposed as an inclined plane, sloping from above downwards and forwards. Thus the plate is thin at its posterior part, becoming steadily thicker till it reaches its maximum at the edge of the lunula, not further increasing in thickness as it travels forward over the nail-bed. In her case, so far as can be learned, the condition is congenital; at least, she cannot remember nails in any other state. An elder sister is said to have had nails like hers, and to have recovered. I have seen a somewhat similar condition in some of the nails as an acquired condition, the nail-fold seeming to have disappeared, but it is doubtful if we can by treatment restore the deficiency. She has been seen by Dr Byrom Bramwell, who has advised her to take iron; and as she is certainly rather anæmic, this may do good.

(*c.*) MELANOTIC SARCOMA OF SOLE.—H. P., 34, vanman. Admitted to Ward 38, March 25th, 1893. Sent by Dr Calder of Leith. The only point of interest in his family history is that several members of his kinsfolk have pigmented moles on their bodies. With exception of rheumatism he has had good health. His skin is rather sallow, but he looks fairly robust. He has several small dark-brown or blackish moles or stains on various parts of his body. One from the abdomen has been excised, and is being examined in the Laboratory of the Royal College of Physicians, but the report has not yet been received. He has also two pigmented hairy moles on the neck, a filiform wart under the left ear, and a spider nævus near the acromial end of the right clavicle. About seven years since a carpet tack ran deeply into the centre of the sole of the right foot, and after this—but he is not sure exactly how long—a black mark appeared at the injured spot. It has certainly been there, he states, for six years. This has slowly grown larger, and is now the size of a shilling, is sharply defined from the surrounding skin, is coal black in tint; viewed sideways it has a slight greenish hue, is elevated very little above the surface, has a velvety aspect and feel, except in centre, where part is smooth, paler, and fluctuates on palpation. As none of the lymphatic glands in the direction of the current from the foot are distinctly enlarged, there is no positive evidence of systemic infection. In the meantime he has subcutaneous injections of Liq. arsenicalis, four minims diluted, daily. The examination of the excised mole may aid in determining if the growth should be removed.

[*Note*—1st June 1893.—The result of the examination of the pigmentary stain showed a copious deposit of dark-brown granules in the deepest layer of the rete, some apparently within, others apart from the cells. There was a scanty deposit of similar granules in the papillary portion of the corium, in the neighbourhood of the vessels, but no distinctly sarcomatous elements. Dr Noël Paton, who was good enough to examine the sections independently, confirmed this. The administration of arsenic was persevered in, in slightly increased dose, till the 15th May. The patch on the sole had then become of a more pronounced greenish black, rather flatter, and somewhat paler in the centre, but was otherwise unchanged. Several glands in the groin were now, however, a little enlarged. Professor Chiene that day removed the whole growth, and grafted into its place a circular piece of skin from the thigh. This had lived when first dressed, but the granulations were not alike active all round. A gland was also cut out from the groin for examination in the Surgical Laboratory of the University. The growth from the sole proved to be a round-celled melano-sarcoma. The gland also was sarcomatous, with a scanty but undeniable pigmentary deposit.]

3. *Dr M'Bride* showed a case of PRIMARY LUPUS affecting the palate and nostrils. The characteristic nodular infiltration, with absence of ulceration, was well seen in the former situation.

II. Exhibition of Specimens.

1. *Professor Struthers* exhibited a series of specimens of OPEN FORAMEN OVALE OF THE HEART.

(1.) Foramen largely open in a female, aged 58. Size of the foramen—across the middle, 1¼ inch; from the free edge of the imperfect valve to the upper edge of the foramen, ¾ inch or 1 inch, according as the auricle is contracted or distended; admits three fingers. Septal valve (valve of the foramen ovale) imperfect, of crescentic form, ⅝ inch broad at the broadest part; is a thick membrane, with the usual translucency of the floor of the fossa ovalis. [It will be remembered that this valve in the normal condition has, by the middle of fœtal life, risen so high as to be capable of completely closing the foramen.] Only the usual adult vestige of the Eustachian valve has remained. Orifices of the venæ cavæ normal; orifice of the coronary sinus normal, but valve not present. Right auriculo-ventricular orifice large, easily admitting four fingers. Right ventricle, now freely slit open, appears to have been dilated; walls thicker than usual, nearly as thick as those of the left ventricle, which are not thicker than usual. Circumference of the pulmonary orifice, 4⅛ inches, being about ½ inch more than that stated to be the average; pulmonary semilunar valves thickened, and have each a pronounced corpus Arantii. Right pulmonary artery entire; is of large size; orifice, where divided as it emerges from behind aorta, 1⅛ inch in diameter. Left auriculo-ventricular orifice rather smaller than usual, with some thickening of the valve, admitting the points of three fingers. The cavities of the heart had been injected, the injection having, as usually seen in elderly subjects in the dissecting-room, passed the valves of the left heart, and gained entrance to the right heart by the open foramen ovale. Aorta, still filled with injection, of full size for an aorta in that condition. Heart as a whole considerably larger than usual, and, as far as can be judged, that is mainly on the right side.

The points of interest in this specimen are the very largely open condition of the foramen ovale, and with that the large size of the tricuspid and pulmonary orifices, contrary to what one would expect with the free passage of blood from the right to the left auricle. There is no history of the appearance or habits of the person, except that she had been an inmate of a poor-house, and that death was certified to have been from heart disease. There was a talipes varus on one side.

(2.) From a female, aged 60. The opening at the upper part of the fossa ovalis is, when rounded, $\frac{3}{8}$ inch in diameter, scarcely admitting the point of the little finger. The free edge of the septal valve does not reach to the edge of the fossa, leaving an elliptical window, as seen when the parts are viewed from either auricle. Eustachian valve large, proportionately as large as in fœtal life. It is an inch in breadth to the free margin, and rises high enough to be opposite the middle of the fossa ovalis. It is a thick membrane, with muscular bundles on the part of it next the cava.

(3.) From a female, aged 70. Opening about same size as in last case, but the free edge of the septal valve reaches $\frac{1}{4}$ inch above the upper edge of the fossa, its horns $\frac{1}{4}$ inch further, so that the passage from right to left auricle is oblique. Fossa ovalis in this specimen small, 1 inch by $\frac{1}{2}$ inch. As there is no record in regard to the Eustachian valve, and as the cava has not been preserved, it is inferred that the valve was not unusual. The person died suddenly, but had reached her seventieth year, and was said to have enjoyed good health.

(4.) From an adult subject. Opening at the top of the foramen ovale small, admitting a goose quill. Eustachian valve has remained of full extent, but, except at its attachment, is in a completely reticular condition. It has floated like a network in the blood of the auricle. A few free fibrous cords are seen on the lower half of the fossa ovalis, the cords attached to the edges and floor of the fossa.

Remarks.—In case 1 the open condition of the foramen cannot be attributed to impediment at the pulmonary orifice, but must be attributed to imperfect development of the septal valve. As the Eustachian valve had disappeared in half its breadth, the blood of the lower cava would not tend to pass to the left auricle so much as in the fœtal condition, but there must have been considerable commingling of arterial and venous blood through or at the foramen ovale. The patient, notwithstanding, had reached the age of 58 years. If the stream at the foramen ovale was mainly from the left to the right auricle, the pulmonary heart would have additional labour thrown on it, and that partly wasted by the pulmonic blood returning to the right heart. That additional labour would account for the hypertrophy of the right heart.

Cases 2, 3, and 4 are examples of the opening being larger than the small oblique one, large enough to receive a probe,—found as often, it has been estimated, as in one of every five or six subjects. In case 2 there must have been some mixture of arterial and venous blood, as the opening was direct and the

Eustachian valve remained of full size. In cases 3 and 4, as to a lesser extent in the more common occurrence of a small oblique opening, there would, however, be some amount of venous blood sent into the left auricle, as will be understood when the direction of the current from the inferior cava is borne in mind. The amount, however, even in these two cases, would be small relatively to the volume of the current; and the persons had, as also in case 2, attained adult life without history of imperfect health.

In regard to the Eustachian valve in cases of more or less open foramen ovale, it is manifest that its persistence cannot be beneficial to the person, as its effect is to direct the blood of the lower cava towards the left auricle. In case 4 it could have no effect as a membrane. Floating as a network in the blood stream, it was functionless, if not also dangerous. If being withdrawn as useless, the withdrawal had been long in beginning. Such a condition of the valve offers an illustration of the persistent vitality of tissue. In case 2 the fully persistent Eustachian valve must have contributed to the effect of the partially permanent foramen ovale in deteriorating the blood in the left auricle. If it is a fact that, with more or less open foramen ovale, there is a tendency to have persistence of the Eustachian valve, it cannot be explained from the point of view of function or utility. To say that such a relation is but a natural accompaniment in cases of partial permanence of the fœtal conditions would not be a satisfactory explanation, for the nutritive force has fallen short in the valve of the foramen ovale, and has been excessive in the Eustachian valve. When the open foramen ovale has been owing to contraction of the pulmonic orifice in early life, there can be no functional advantage in the persistence of the Eustachian valve.

The specimen in case 2 shows clearly, in adult size, the normal adaptations of these parts in fœtal life; that the lower cava fills the left auricle through the foramen ovale; that the Eustachian valve is a prolongation from the anterior part of the mouth of the cava; the deep groove along the back part of the auricle from the cava to the foramen ovale; and that the septal valve is a prolongation of the posterior wall of the lower cava, depressed by the current, and ready to be floated up by the reversed current at birth, so as to close the foramen.

2. *Mr Cotterill* showed a SPECIMEN and PHOTOGRAPH from a case of CEREBRAL ABSCESS. The patient was a young woman who had suffered from otorrhœa for two years previous to coming under his care. A year ago Dr M'Bride had removed a polypus from the affected ear. The discharge, however, continued, and in October last patient came back to the Infirmary, and Dr M'Bride found it necessary to trephine the mastoid. The case did not go on satisfactorily, and in January the patient was admitted to Mr Cotterill's ward, still suffering from profuse otorrhœa. She had, in addition,

facial paralysis and severe headache. Temperature was subnormal. She had double optic neuritis, and this, it was ascertained, had existed for six months. Cerebral abscess seemed extremely likely, but there was no paralysis to indicate its situation. The mastoid antrum was opened up again and a sequestrum of some size removed, but no improvement took place. After a few weeks patient became much worse. Headache and general disturbance of the brain became very marked. It was thought advisable to trephine, but the question was, Where? He himself preferred in most cases Barker's position, 1¼ inch behind and 1¼ inch above the external auditory meatus. Dr M'Bride, however, in this case, advised trephining a little above and in front of the meatus. This was done. No pus was found at the spot nor after exploration with a trocar in various directions. Patient afterwards went on very well for a time, but about four weeks later she suddenly became paralyzed on the right side. Permission for trephining again was strongly urged, but was not obtained. After death an abscess about the size of a walnut was found, which had evidently for several months remained confined to the posterior tip of the occipital lobe, and which appeared to be the original metastatic abscess centre. It had spread rapidly, and was found lately after death to have invaded the posterior third of the left hemisphere, encroaching upon the arm and leg centres shortly before death. Until this time it had given no information from which its probable position could be diagnosed.

III. Original Communications.

1. *Mr Caird* read his paper on THE SITE FOR AMPUTATION IN GANGRENE OF THE LOWER EXTREMITY.

The President said he believed in amputating high up at once in such cases. He referred to the case of an old man who had had his leg smashed in a railway accident, and who would not have it taken off at first. His leg became gangrenous, his temperature rose, and he apparently began to suffer from septic infection of the whole system. The case seemed a hopeless one; but the man consenting to removal of the limb, he decided to give him the chance, and amputated high up near the hip-joint. The patient made a good recovery. There was great truth in Mr Caird's remarks about the way in which Nature succeeded in showing you how to make your flaps. When senile gangrene was confined to the foot, very good results were got by doing a Syme. Some years ago he had had to go to the south of Scotland to see an old gentleman with senile gangrene of the foot. The friends would not allow him to amputate. A year later he got another message to go and see the same patient. He found the whole foot as far as the ankle hard, black, and firm; but Nature had now made an amputation, and a beautiful one. The foot was hanging on merely by its tendons. The skin had actually united through the ankle-joint. The tendons had simply to be divided, retracting into holes. In his experience, if the disease passed the corner of the heel it was necessary to go a long way up for amputation. They had to get very near a Carden. He had not often had sloughing of the flaps with a Carden.

Mr Cathcart said that within the last few days he had been making a number of dissections of cases of gangrene that he had been collecting in connexion with the College of Surgeons' Museum, and one thing that had struck him very much was how frequently in moist senile gangrene the obstruction had been about the upper part of the posterior tibial artery. He had noticed that when the line of demarcation was near the ankle, the real obstruction was up about the knee. Consequently, in order to be certain of getting a good vascular supply, it would be important in amputating to go near the knee-joint. It had recently been shown that there was about as free an anastomosis of the arteries in the skin as there was round about most joints. This explained why the line of demarcation was always lower than the point of obstruction of the artery. This anastomosis in the skin would always help to carry the blood far down below the point of obstruction. As a rule, he thought it was best to amputate about the knee. He preferred amputating at the knee-joint, without sawing the bone.

Mr Cotterill said he thought Mr Caird had put the case very clearly. He had operated immediately above the knee by the ordinary Carden, and he had not had much difficulty with the flaps. He agreed with him very strongly about the impropriety of operating anywhere between the knee and the ankle for gangrene affecting the foot in any shape. If circumstances forced one to amputate between the knee and the ankle, he thought the best results were got in these cases of doubtful circulation by taking a long, free, and loose posterior flap.

Mr Caird replied.

2. *Dr Norman Walker* read a paper on WHAT CONSTITUTES A RODENT ULCER? It was illustrated by a large number of microscopic specimens and limelight views.

The President thanked Dr Walker for his interesting paper and demonstration.

Mr Cathcart congratulated Dr Walker on the exceedingly clear way in which he had sketched out the previous views on the subject, and the admirable manner in which he had demonstrated the specimens. He was greatly interested in his remarks as to the seat of the disease. Personally he agreed with him, but not with reasons for his conclusions. Dr Walker had said that one of the reasons why he believed that the disease originated in the sweat glands and not in the sebaceous glands, was that you could find sebaceous glands above the growth, and that if you examined the neighbouring sweat glands they seemed to be taking on the malignant character. So far as he understood, it was no proof that a disease had originated in a certain texture to find the neighbouring parts of that texture involved, nor was it a disproof that the condition had arisen in a certain texture to find other portions not involved. He thought that what Dr Walker found in the neighbourhood were not actually normal sweat glands which had become malignant, but rather outgrowing portions of the growth which had the type of the sweat glands from which they had originally grown. There was another growth of a similar sort of type which threw some light on the case,—the tubular cancer of the rectum or stomach. In the neighbourhood of these, portions were found which looked fairly like ducts or glands, but which were recognised as being portions of the tumour, and not normal tubes. The analogy that Dr Walker had shown to exist between the scirrhus and sweat gland tumours was exceedingly interesting. He thought the scirrhus and the rodent ulcer might very naturally be expected to be similar. A fact that was constantly growing upon him was, there was a great deal of variety in the malignancy of tumours which had the same histological starting-point. This might explain some of the apparently anomalous forms.

Dr Allan Jamieson commended the extreme care with which the paper had been prepared, and the beautiful way in which it had been illustrated. The view that Dr Walker had taken up was that advocated by Dr Thin, except that that authority regarded the condition as an *adenoma* of the sweat glands. There were one or two points, perhaps rather from the clinical than from the pathological point of view, which required clearing up. How did it happen that this growth developed specially on the face and on the upper part of the face,—that part in which the sebaceous glands were specially liable to morbid conditions, and the sweat glands less so? It was the place where sebaceous warts and acne specially occurred, and also a peculiar growth which had recently been the subject of a considerable amount of discussion, and which had been regarded as an adenoma of the sweat glands. In this condition there was the formation of small pearly-looking growths, about the size of pin-heads, and it was usually found just exactly in that situation, above the middle of the face, which was perhaps the seat *par excellence* of rodent ulcer. This peculiar growth had been described as an epithelioma lately by Dr Brook of Manchester. He had described something resembling the tubular arrangement that Mr Cathcart had spoken of. He found that deep down in the corium there were convoluted strands which presented a tubular arrangement, with columnar cells, set so as to exactly resemble a tube; and though it had perhaps not a complete lumen, yet if one looked at it with a not too high power, it presented the appearance of a sweat gland. Dr Brook described it as arising from the hair follicle, and in a case which he (Dr Jamieson) had recently had, associated with hyperidrosis of this part of the face, there were a number of peculiar small, vesicular-looking bodies which appeared when the patient perspired very much, and which disappeared when the patient did not perspire. He excised two of them, and curiously enough he found exactly the same tubular arrangement that Dr Brook had described as occurring in this form of epithelioma of the face. Though this growth did not degenerate so as to produce an ulcer, yet it might, he thought, have some analogy to rodent ulcer. He pointed out, as a fact which seemed a little against rodent ulcer being due to new formation arising in the sweat glands, that on the palm of the hand, where sweat glands were found alone, rodent ulcer was unknown. It occurred in any part of the body where there were both sweat-glands and sebaceous glands, but never in situations where there were sweat glands alone. There was no doubt that rodent ulcer was a growth of a very peculiar kind. It was not associated with much new growth, more with destruction of tissue. With regard to its treatment, he agreed with Dr Walker that it was not necessary to cut widely, but that it was necessary to cut deeply. This fact was in favour of its origin from the sweat glands rather than from the sebaceous glands.

Dr William Russell said that as a pathologist he had regarded rodent ulcer as a skin cancer, as Dr Walker had described it. He had regarded it as probably arising in different cases from various of the skin appendages, and he was somewhat surprised at the very positive and somewhat sweeping position that Dr Walker took up on the question; because, seeing that authorities had been divided a good deal as to the structure from which these rodent ulcers originated, he himself would have hesitated in taking up an exclusive position with regard to any one of the structures, unless he had had the opportunity of examining a very large number of cases. He did not know how many cases of this kind Dr Walker had examined, but if it was not a large number, it was possible that though he had satisfied himself that in the cases examined the growth arose in the sweat glands, it did not follow that all rodent ulcers arose in this position. Those that he had examined had rather led him to the view that rodent ulcer developed from any of the skin appendages. He referred to the extreme difficulty in some cases of diagnosing between rodent ulcer, epithelioma, and lupus. He had known cases operated upon as cases of lupus which were afterwards found to show a new growth of epithelium. He would like to ask either Dr Walker or Dr Stiles whether the absence of round-celled infiltration was really a character of rodent ulcer? In his experience, in many epitheliomatous growths, one could find parts in which there was a marked round-celled infiltration, and others in which there was none. If this presence or absence of small-celled infiltration was as rigid a line as Dr Walker appeared to consider it, the point would be a great aid to diagnosis, and doubtful cases would resolve themselves either into cases of tubercular skin affection, or tubercular skin affection *plus* a slight atypical growth of epithelium.

Dr Stiles said he was a little staggered at Dr Walker's positive conclusion that rodent ulcer took its origin from the sweat glands. To any one who had not had an opportunity of examining these tumours the specimens which were thrown on the screen could not be convincing. From what he had seen of rodent ulcer he considered the sweat glands as the last source of origin of rodent ulcer. There was little doubt that one could distinguish almost at once a rodent ulcer from an ordinary epithelioma arising from the rete Malpighi, but one could not always distinguish an epithelioma which was ulcerating from a rodent ulcer. Only the other day he had been sent a specimen of supposed epithelioma of the umbilicus, which proved to be a typical rodent ulcer. He had previously examined an epithelioma of the umbilicus, and noticed that there was a very marked small-celled infiltration bounding the epithelial growth, while in the rodent ulcer this was almost absent. He agreed with Dr Walker that this was one of the distinguishing features of rodent ulcer. The reason was that rodent ulcer was an exceedingly slow-growing tumour and did not give rise to much irritation. There was very little connective tissue overgrowth, only the cells spreading deeply into the skin. The thing that struck one most in examining a rodent ulcer was the absence of typical horny cell-nests. There was no keratosis of the epithelium. The cells, however, might be arranged concentrically, giving rise to an imperfect cell-nest appearance. The question came to be whether the growth arose from the root-sheath of the hair follicle, the sebaceous glands, or the sweat glands. He agreed with the remarks of Mr Cathcart on the subject. He thought that Dr Walker's arguments did not prove that rodent ulcer did not arise from the sebaceous glands. He believed that they arose from small foci, and that they resulted from the activity of cells that had taken on malignant action. Regarding the arrangement of the cell elements, it differed in primary and in recurrent growths. In the primary nodule one generally found large masses of epithelium such as Dr Walker had shown on the screen. In a recurrent case, on the other hand one found that the appearance was exactly that of an ordinary scirrhus, looking very like some of the forms of carcinoma of the skin, secondary to carcinoma of the mamma. A simple tumour of the sebaceous glands, such as the fibro-adenoma of the nose, consisted of an overgrowth of sebaceous glands with very little small-celled infiltration. The sebaceous glands had not undergone any great transformation. In rodent ulcer the cells were exceedingly small, but still he could not see why the growth should not have started from the germinal cells of the sebaceous glands, which were also exceedingly small. The outer root-sheath of the hair follicle was another possible source of rodent ulcer. It was a structure very near to the sebaceous glands. He had seen nothing that would justify him in putting down the origin of rodent ulcer to the sweat glands. There was sometimes an overgrowth of Malpighian epithelium in rodent ulcer, but he thought it was comparable to a similar thing that sometimes occurred in lupus, and that it was irritative and secondary in character. The reason why rodent ulcer did not extend by the lymphatics was probably its slow growth and the adhesion of the cells to each other. There was an absence of fibrous tissue to cause constriction and dilatation of the lymphatics. In reply to a question by Mr Cathcart, he said it was to be remembered that in the sebaceous glands the size of the cell was simply due to the accumulation of sebaceous material in it. The cells of the rodent ulcer were probably really larger than the germinal cells of a sebaceous gland.

Dr Walker, in reply, said that, regarding Dr Cathcart's criticisms, certainly the fact that a gland had proliferated was no proof that the disease had started there. It was important, however, that he had shown a specimen of sebaceous gland *atrophying* above and below the new growth. The sebaceous glands never in his specimens took on a malignant action. In one of the microscopic specimens shown he thought it was plain that a sweat gland was becoming cancerous. To a certain extent he took up Dr Thin's view, as Dr Jamieson had said, but he thought it was too limited. An adenoma was not, strictly speaking, a malignant growth: a rodent ulcer was certainly malignant. He had come across one case of adenoma of sweat glands. It presented no similarity to rodent ulcer. His cases had not all arisen from the sweat glands. Some had started from the sweat ducts. With regard to Dr Jamieson's remark upon the occurrence of rodent ulcer upon the face, it was a question which no one had ever answered. Though acne was common in the same situation, it was to be remembered that acne was just as common on the back, where rodent ulcer was not. Dr Brook's case of epithelioma adenoides cysticum had not much bearing upon rodent ulcer. He had removed a similar growth from a boy of twelve. It had no resemblance to rodent ulcer, but probably was due to proliferation of the endothelium of the lymphatics. With regard to the number of cases upon which he founded his conclusions, he had, as a matter of fact, examined a larger number of cases than the majority of the other authorities he had quoted, few of whom had based their conclusions upon more than six cases. He laid great stress upon the character of the cells, their small size, and the fact that they developed in these tubular forms, which, he thought, was very suggestive of their growth from the sweat glands. If they came from the sebaceous glands, why should they grow in tubes? With regard to Dr Russell's remarks, it was well known to dermatologists that epithelioma is not at all uncommon on the top of lupus. He did not mean to say that one could diagnose a rodent ulcer from the absence of round-celled infiltration, but merely that this was a much more prominent feature in epithelioma than in rodent ulcer. Dr Stiles had only his opinion to offer in support of his view that the disease started from the sebaceous glands. Then as to the suggestion that it might start from one cell, theoretically it was very nice, but was scarcely to be believed. If it was so, then it was no use studying where rodent ulcer began. He was not yet converted to the parasitic theory of cancer, which was associated with this view. In some of his specimens it was shown, he thought absolutely beyond doubt, that the disease arose from the sweat glands. It was to be remembered that rodent ulcer might become epitheliomatous. He believed that there were cases where ordinary epithelioma arose from the sweat glands.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LIV.—MEETING VI.

Wednesday, 10*th May* 1893.—Prof. A. R. SIMPSON, *President, in the Chair.*

I. *Dr James Carmichael* showed the HEART OF A CHILD WITH CONGENITAL MALFORMATION. The heart in the recent state exhibited the following appearances:—It was of a dark red colour. The right ventricle was much enlarged, forming most of the apex of the organ. The appendix of the left auricle projected unusually far forward in front of the pulmonary artery. The pulmonary artery was dilated. The pulmonary valve was normal; the conus arteriosus beneath showed remarkable hypertrophy. The aorta was somewhat large in its ascending portion, the innominate and left carotid coming off within one-eighth of an inch of each other, one-quarter of an inch further on another minute branch, and one-eighth of an inch further still, the left subclavian. Beyond the subclavian the aorta took a sharp V-shaped bend downwards, and into the apex of the V a patent ductus arteriosus entered. Beyond the second limb of the V the aorta appeared of normal diameter. The left auricle was dilated. Its cavity would have held a bantam's egg. The pulmonary veins ended within the lung, the auricular cavity having extended back to the lung. The foramen ovale was closed. The walls of the left ventricle were thickened, the cavity being slightly less than normal in size. The mitral orifice was almost completely stenosed, the chordæ tendineæ and valve segments being so fused together as to leave only three minute orifices big enough to allow the passage of a probe, the only passages for the blood to flow through. The aortic valve appeared normal. The right ventricle was much hypertrophied, and the cavity dilated. The tricuspid valve was normal. Intra-ventricular septum quite closed. Right auricle dilated, but its walls not thickened. The child was a girl three years old. Clinically she presented a typical picture of cyanosis. The history showed that at birth the child appeared to be healthy, and passed through the lactating period without any ailment. When about a year old she began occasionally to suffer from fits of dyspnœa. On examination of the heart the precordia showed some bulging; the apex beat was in the fifth interspace, just internal to the vertical line of the nipple. Percussion showed a normal area of dulness. On auscultation the sounds were loud and distinct, following one another with more than usual rapidity, the long pause being correspondingly lengthened. No murmur was at any time audible. There was marked reduplication of both sounds in all the areas. The pulse was abnormally frequent, generally about 100, and somewhat irregular; the radial, posterior tibial, and brachial pulses were imperceptible; those of the larger arteries could be made out with sufficient distinctness.

II. *The President* showed A DOUBLE OVARIAN TUMOUR from a patient who had been sent to the Infirmary by Dr Braidwood of Halkirk, suffering from tumours of the ovaries, complicated with cancer of the liver. The following are the ward notes of the case:—Mrs G., æt 51, Caithness. Patient admitted 9th March 1893, complaining of pain in back and swelling of abdomen. Her trouble, she states, began ten weeks ago with stabbing pains in left iliac region, and about five weeks after this she noticed the abdomen begin to swell and increase rapidly in size. She called in Dr Braidwood, who on four occasions tapped, and removed about 70 ounces each time. During the last few weeks patient has got much thinner, and has been reduced in strength. Her previous health had always been good, except for occasional severe pains in the epigastric and right hypochondriac regions. Her sexual history shows menstruation began at age of 14, was of twenty-eight-day type and seven days' duration, the amount being rather free. It was regular till August 1892, when it began to vary somewhat. She has always suffered from dysmenorrhœa and tendency to menorrhagia. She has had thirteen pregnancies, first thirty-one years ago, the last five years ago. Three of them ended as miscarriages. Labours were easy, and puerperia normal. Patient is tall and well-formed, but much emaciated. Mammæ are markedly parous, but no secretion is obtainable. Abdomen is greatly enlarged by a tumour extending to the ensiform cartilage, and lying chiefly to the right side. There is much tenderness all over the abdomen, and fluctuation is easily obtained. *14th March* 1893.—Patient anæsthetised and laparotomy performed. Double compound cystic ovarian tumour was removed. Both tumours showed many adhesions. There were also seen to be carcinomatous nodules in the liver. Notwithstanding this, patient made an excellent recovery, and was dismissed in the end of April, much improved in general health. On examination during life a nodulated condition was felt in connexion with the lowest portion of the tumour. This was thought to be due to a malignant condition, but no such change was found after the tumours were removed, the nodules being organised blood-clots and small cysts in the tumour wall.

III. *The President* showed A CYSTIC SWELLING from the hind head of an infant, which had been sent by Dr Inglis of Stratford. The mother had had five children previously, all healthy and well formed. The child had presented normally, but there was considerable difficulty experienced in extracting the body, as the tumour, which was larger than the head, caused delay. Two days after birth, Dr Inglis amputated the tumour, which showed on its surface its relation with the hairy scalp, and the child had made a good recovery.

IV. *Dr J. C. Webster* showed—(*a.*) THE REMAINS OF A FŒTUS, removed by Dr Frederick Mann of Ashton-under-Lyne, from an extra-uterine gestation sac, opened through the vagina. A complete decidual cast of the uterine cavity from the same case was also shown. (*b.*) A FIBROID POLYPUS, FŒTUS, and PORTIONS OF PLACENTA from a case of placenta prævia. The patient was admitted to Ward XXIV. in April, when Dr Webster was acting for the house-physician. She complained of hæmorrhage from the vagina, which had lasted almost continuously for four or five weeks. She was very anæmic, and did not suspect she was pregnant. She was put to bed on her admission,—a large fibroid polypus, the size of a goose-egg, having been found in the vagina, passing up into the uterus. In the evening labour pains came on, a three months' fœtus being born, and the polypus being partly extruded through the vulva. On being called to her, Dr Webster found her almost pulseless, a large amount of blood having been lost. The placenta was undetached, and was found to be prævia, being situated on the anterior uterine wall, its lower edge being at the *os internum*, about the level of the attachment of the tumour. The latter was removed by ligation of its pedicle. The placenta was next removed with the curette, because there was no time, on account of the patient's weak state, to dilate the cervix sufficiently to allow of removal by the fingers. The cavity was then swabbed with perchloride of iron solution, washed out, and then packed, along with the vagina, with iodoform gauze. The plug was removed on the third day, and the vagina douched with an antiseptic solution daily afterwards. The patient has made a good recovery.

V. *Dr Matheson Cullen* showed, for *Dr Wm. Wood*, a DOUBLE ADHERENT PLACENTA. Notes of Case:—Mrs C., a multipara, aged 35, gave birth to male twins on March 26th. She had had six previous children. The labour in this, her seventh pregnancy, was followed by severe post-partum hæmorrhage, with adherent placenta and well-marked hour-glass contraction of the uterus. *History.*—The patient was married in 1879, being then 21 years of age. Previous to the confinement under consideration she had given birth to six children, each of whom was born at regular intervals of 18 months. Two days after her marriage she gave birth to a premature child, a girl, certified as being of the seventh month. This child died of convulsions when 11 months old. The second child was also a girl, the labour being quite normal. The third child, likewise a girl, was supposed to be born about the eighth month of gestation, the labour being brought on as the result of a fall to the mother. The child died shortly after birth. This labour was remarkable for the excessive post-partum hæmorrhage, which nearly proved fatal. The doctor in attendance warned her as to the danger of having any more children. The fourth, fifth, and sixth children were all boys, and were born at full time, the placenta being adherent in each instance and having to be removed in pieces, severe post-partum hæmorrhage following. The fourth child, it might be mentioned, was delivered under chloroform and with forceps. The seventh confinement (the one now under consideration) occurred three years after birth of No. 6. This was a case of twins,—the first child, a vertex presentation, being delivered in the usual way; while the second one, born after an interval of twenty minutes, was a breech case. About five minutes after the birth of the second child the student and nurse in attendance noticed a sudden gush of blood,—the bedclothes, the bed, and even the floor being deluged with blood. This made the patient very nervous and exhausted. The student in charge having sent a messenger for me, administered to the patient thirty minims of spiritus ammoniæ aromaticus, and endeavoured to restrain the bleeding by firm pressure on the uterus through the abdominal wall. On my arrival, a few minutes afterwards, I found the patient suffering from severe exhaustion, the pulse being quite imperceptible at the wrist. The patient expressed a feeling of great faintness, which was followed by syncope. The skin was cold, and covered with profuse perspiration. On placing the hand on the abdomen the uterus was felt to be irregularly contracted, and larger than normal. I therefore placed the patient across the bed, and, following up the cord, introduced my hand through the cervical canal, and there felt the closed os internum with the umbilical cord passing through it. By gentle and continuous pressure of the fingers passed within the constriction, and by the uterus being supported from without, the hæmorrhage was controlled, and in about ten minutes the spasm was sufficiently relaxed to admit of the passage of my hand. Following up the cord to the site of attachment of the placenta, I gently insinuated my fingers between the edge of the placenta and the uterine wall, and in this way succeeded in peeling off and removing the placenta. That placenta is now before you. After removal of the placenta I re-introduced my hand into the uterus, but failed to make out any further adhesions. During the time the placenta was being detached the hæmorrhage was very slight indeed. This may probably be accounted for by the extreme exhaustion of the mother. I now gave an inter-uterine douche of corrosive sublimate (1 in 2000) at a temperature of about 120° F. This, together with a hypodermic injection of ergotin, stimulated the uterus to contract, and the bleeding ceased. The patient's condition was now one of extreme collapse. Hot-water bottles were applied to the feet, the foot of the bed raised, and a hypodermic injection of ether was administered, this being followed in twenty minutes by a warm enema, consisting of three ounces of brandy. Consciousness gradually returned. The patient was then fed with strong beef essence, warm brandy and water, milk and egg, getting small quantities alternately every thirty minutes. The stage of reaction was treated most successfully by suppositories of morphine. The woman made a good recovery. She was able to sit up for a short time on the twelfth day, and now she and the twins are doing well. In conclusion, gentlemen, I must state that, so far as I was able to make out from the patient's history, there was no specific element to account for the cause of the adhesions, and I think the case is one of interest, from the fact that after the premature birth of the third child, which was the result of a fall, each succeeding labour has been accompanied by an adhesion of the placenta and post-partum hæmorrhage. I may also state another remarkable fact—namely, that out of over 1000 cases of midwifery which I have had under my charge, this is the first case of adhesion of the placenta I have met with.

VI. *The President* read his paper on PROLAPSE OF THE FEMALE URETHRA, illustrated by Microscopic Specimens, which will appear in a future number of this Journal.

Dr J. W. Ballantyne thought that the Fellows were much indebted to the President for the two eminently practical and exceedingly valuable papers that he had given them this session. His suggestive paper on the use of glycerine injections in labour would no doubt yield immediate good results in the practice of many busy obstetricians, and the contribution of the evening would stimulate all gynecologists to look for and treat the condition which had been named prolapse of the urethra. Dr Ballantyne had not, so far as he was aware, come across this condition in the adult female, but he had seen a somewhat analogous condition in some new-born infants; in them there appeared to be a redundancy of the urethral mucosa, which at first sight suggested to his mind a trifling degree of epi- or hypospadias, and which disappeared spontaneously. He would like to ask the President whether he had noticed dilatation of the urethra in either of his cases, for Skene had pointed out the frequent association of dilatation of the middle third of the urethra with prolapse of its mucous membrane. He would also like to ask what was the explanation of the thickening of the submucosa which had been described, for in order to understand how the condition of prolapsus arose it seemed to be necessary to believe that there was some looseness of this layer permitting displacement.

Dr J. C. Webster had carefully examined the specimens, and found that they presented some points of much interest. In the first place, the prolapsed portion of the urethra was covered with a well-marked and folded layer of transitional epithelium. It is usually taught, and in most cases it appears to be true, that the lower end of the urethra is lined with stratified squamous epithelium. Here it would appear that there might have been an extension downwards of the upper urethral transitional epithelium, and the analogy suggested itself of the extension downward of the epithelium lining the cervix displacing the squamous covering of the vaginal surface of the cervix in cases of catarrhal patch. In the case of the urethra the submucous tissues showed also inflammatory changes like those found in endocervicitis. The condition described as prolapse might not be a mere mechanical prolapse, but a hyperplastic downward growth of the urethral mucosa. In the next place, the structure of the submucous tissue exactly resembled that of a caruncle. Where both prolapse and caruncle existed together, it was impossible by the microscope to tell any difference between them. The origin of caruncle should be carefully studied. It was possible that it might be a localized extension, very marked in degree, of the condition now described as prolapsus of the urethra. The naked-eye examination of caruncles of various sizes pointed strongly in favour of this relationship.

Dr Church thought that the dysuria which so many old women complained of might, in some cases, be due to partial prolapse of the urethra. With a general atony of the muscular system there would be also a loss of contractile power in the *constrictor urethræ*, and consequently there would be permitted a protrusion of the mucous membrane immediately above the constrictor, which would become more vascular and irritable. After each act of micturition there would occur a reduction of the prolapse which the effort occasioned.

The President thought Dr Church's suggestion was very feasible, and it would be desirable in all cases of dysuria in elderly women to make careful examination of the urethra. With regard to the pathological change of the mucous membrane in this condition, it would be of interest to repeat such observations as Dr Webster had made in the cases under discussion. It had seemed to him (the President) that to the naked eye the change in the displaced urethral mucosa resembled that which was to be found in other displaced and exposed mucous membranes. Mucous membranes that were normally in contact with other surfaces were ordinarily not specially vascular,—at the most rosy red. The palpebral conjunctiva, *e.g.*, was not notably red; but let ectropion exist for a short period, and the exposed conjunctiva became extremely hyperæmic. So the uterine mucosa, except at menstrual periods, was relatively pale; let the uterus become inverted, and the redness of the mucosa in the vaginal cavity helped to distinguish the inverted uterus from a polypus. The vesical mucous membrane, as seen through the cystoscope, looked yellow rather than red; let the bladder project for a time into the vagina through a fistulous aperture, or be observed in a case of extroversion, and the exposed portion was seen to be red as a cherry. So with lacerations of the cervix, leading to ectropion, in which the vascularity of cervical endometritis became apparent. The same thing was seen in the rectum. If the rectal canal was examined in cases free from piles, fissures, etc., it would be found to be pale; but if it became prolapsed it became persistently vascular. The nature of the change, and the cause of it, in all these parallel cases, were well worthy of investigation. As regarded the designation which had usually been applied to the condition, it was probably adopted from the habit of speaking of prolapse of the rectum when there was a corresponding displacement of the mucous membrane of the neighbouring canal.

VII. *Dr John Thomson* read his NOTE ON THREE LIVING CASES OF ACHONDROPLASIA, which appeared at page 1109, vol. xxxviii., of this Journal.

The President had listened with much interest to Dr Thomson's important communication. The subject he had dealt with was only beginning to be understood. He had recently read a paper by Schwarzwäller on the so-called fœtal rickets, which had led him (the President) to believe that cases he had formerly regarded as rickets required another interpretation, and must be brought into the category described and illustrated by Dr Thomson in his valuable paper.

Dr J. W. Ballantyne thought that Dr Thomson was to be congratulated upon the business-like manner in which he had secured photographs of the two adult achondroplasiacs, for he understood that they had only spent a day or two in Edinburgh. Dr Ballantyne was of opinion that the specimen of phocomely shown to the Society some years ago by the President was really one of fœtal achondroplasia; he had recently examined the skeleton, and had come to the conclusion that such was its nature, and he intended before long to read a short paper upon it. Some order was now being introduced into the confused subject of intra-uterine bone diseases, and it seemed that there were at least three distinct conditions to which the name of fœtal rickets had been applied: there were, first, the cases in which some of the ordinary signs of rickets existed at birth—congenital rickets; there was, second, the condition of so-called fœtal rickets, for which the names achondroplasia, chondrodystrophia fœtalis, etc., had been suggested, and upon which many memoirs had recently appeared, that of Dr Sigfrid Müller being the latest; and there was, third, the morbid state, which had been called cured or finished fœtal rachitis. The specimen which he had shown to the Society some years back did not exactly resemble any of these three types, although it had points in common with one of Kaufmann's thirteen cases. No doubt achondroplasia occurred occasionally in infants and did not prevent their extra-uterine life, for a case or two were on record in which an achondroplasic mother had given birth to a fœtus suffering from the same disease, or rather teratological state. Guéniot had recently shown to the Obstetrical Society of Paris a so-called rachitic woman upon whom he had performed Cæsarean section, and whose fœtus presented the same characters as the mother. This was, in Dr Ballantyne's opinion, a clear case of achondroplasia affecting both mother and fœtus. It would therefore seem that this morbid state is occasionally transmitted, but the number of cases in which the mother is free from any such pathological condition of her skeleton is of course relatively very large. It was, as Kaufmann said, a chondrodystrophia, but what was the cause of the chondrodystrophia could not yet even be hinted at.

Dr Felkin thought that the illustrations Dr Thomson showed from Egypt were really intended to represent elephantiasis, the first case of which was depicted 1600 B.C.,—Princess Ati of Punt. The Akkas of Central Africa certainly did not belong to the class of cases dealt with by Dr Thomson. These dwarfs were a distinct race, and they were perfectly formed.

Dr Church suggested that the achondroplasic representations of the Egyptian god Ptah referred to in Dr Thomson's interesting paper were not due to the Egyptian idea that that god was deformed, but to the fact that Ptah was the god of development of the human embryo. The perfection of his work was recognised, and the author was represented in his workmanship. Though we could not credit the Egyptians with a knowledge of achondroplasia, it was interesting to notice how often in the course of Dr Ballantyne's papers there was some reference to that ancient people.

Dr Thomson replied.

VIII. *Dr J. W. Ballantyne* read his Studies in Fœtal Pathology and Teratology, entitled ALLANTOIDO-ANGIOPAGOUS TWINS: PARACEPHALUS DIPUS ACARDIACUS, and REPORT ON TWO FURTHER CASES OF GENERAL DROPSY OF THE FŒTUS, which will appear in a future number of this Journal.

The President said that Dr Ballantyne's contributions opened up some interesting physiological problems. The absence of the thoracic duct in the two cases of fœtal dropsy led one to think that possibly lymphatic absorption was carried on under normal circumstances in fœtal life, else why should the absence of the duct produce such a markedly morbid condition as universal dropsy? With regard to Dr Ballantyne's contribution to the subject of allantoido-angiopagous twins, he was struck by what he had said with regard to their mode of origin. The idea that the acardiac one was originally so malformed as to be incapable of carrying on life without the help of the normal twin seemed to show that in teratology, as in biology, the survival of the fittest was not the only determining factor in the struggle for life; there might also be self-sacrifice of the originally weak. With regard to the circulation in acardiacs, it might be that the better developed specimens received blood direct from the placenta through the umbilical vein, whilst the less developed only got it through the arteries of the normal fœtus after it had already parted with much of its oxygen.

Dr Ballantyne replied.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

THE LOCAL TREATMENT OF DIPHTHERIA. — Escherich (*Wien. Klin. Woch.*, Nos. 7, 8, 9, 10, 1893) discusses at length the ground afforded by bacteriology for believing that the local treatment of diphtheria is likely to be successful. He considers that "it is established that the local application of disinfecting substances is the simplest and most certain way of causing the disappearance of the diphtheria bacillus from the throat." Of the methods of making local applications he has found that two are superior to all others:—(1), Spraying an antiseptic solution directly on to the mucous membrane; and (2), swabbing with sublimate solutions. Of these the former is more effective. It presents the advantages,—(*a*), That the quantity of solution need not be large, and that thus a more concentrated solution may be used without risk of causing general poisoning by the portion swallowed; (*b*), the solution reaches the affected part in the most active, simple way; and (*c*), the application can be localized more accurately to the diseased part. He points out that the area infected by the bacillus may exceed that occupied by visible membrane. The instrument used should be a handball spray, not a steam spray, by which the solution is diluted. Escherich prefers for the spray a solution of corrosive sublimate (1 in 1000). The spray should be used at first every hour, later every two or three hours, night and day. The mouth ought also to be washed out with a mild antiseptic lotion (boric acid or thymol solution). In young children, or in other cases, if it be not possible to get a good view of the throat, recourse must be had to swabbing with sublimate solution. Escherich uses small, fine, soft sponges, which, having been soaked in the solution, are pressed in a twisting motion against the affected parts. At each sitting this is repeated from three to eight times with different sponges, which are held in sponge-holders; one or two sittings are held each day. The sponges can be cleansed by soaking in sublimate solution, and afterwards boiling in water, and are then squeezed out and dried. In this way they may be used several times over.—*British Medical Journal,* April 29th, 1893.

Permanganate of Potash an Antidote to several Organic Poisons. — Antal (*Pesth Med.-Chir. Presse,* No. 7, 1893) experimentally examined the properties of permanganate of potash as an antidote to certain organic poisons, and found that those animals to which muscarine, strychnine, colchicum, oleum sabinæ, and oxalic acid had been administered, followed by a $\frac{1}{2}$ to $\frac{1}{3}$ per cent. solution of permanganate, recovered, whereas animals similarly poisoned, but without resorting to the above-named antidote, succumbed. The author, therefore, suggests its use when poisoning by one of the above substances has taken place in the human subject.—*British Medical Journal,* May 13th, 1893.

Diuretin.—Genersich (*Centralbl. f. Therap.,* March 1893) records his experience of this drug in the case of 16 patients suffering from various forms of dropsy,—namely, 5 due to cardiac disease, 2 to emphysema, 3 to pleurisy, 3 to cirrhosis of the liver, the remainder being associated with nephritis, etc. The daily dose averaged 1 to 1$\frac{1}{2}$ drachm, and the drug was administered in water without any corrective. In two cases of cardiac dropsy excellent results were obtained, with general improvement, though digitalis and calomel had failed. The results in the other patient were not equally brilliant; and the author sums up his observations as follows:—(1), Diuretin increases the flow of urine in some cases of cardiac dropsy, but is uncertain in œdematous conditions due to other causes; (2), it also acts when digitalis, strophanthus, and calomel fail; (3), as a substitute for calomel its action is not sufficiently reliable; (4), the heart is only slightly affected; (5), the disadvantages lie in the price, the unpleasant taste, its effects in deranging the intestinal tract, and the dangerous symptoms occasionally produced (headache, pyrexia, ecchymoses), which necessitate caution.—*British Medical Journal,* April 22nd, 1893.

Bicarbonate of Soda and Digestion.—Linossier and Lemoine (*Gaz. d. Hôp.,* March 30th), in a communication to the Academy of Medicine, conclude that bicarbonate of soda, in all doses, excites gastric secretion. According to their observations, the dose which produces the most powerful effect is one of 5 grammes given an hour before a meal. The action is prolonged beyond the day of administration, an increased secretion being kept up. It is essentially the medicine to be used in cases of insufficient gastric secretion, and ought to be given some time before a meal. In cases of excess of acidity it only acts as a palliative, and there is a risk of its aggravating the condition. They suppose that the administration of hydrochloric acid is of more service in diminishing the excess of secretion just in the same way that alcohol retards alcoholic fermentation, or lactic acid lactic fermentation.—*British Medical Journal,* May 1893.

Eserine in the Treatment of Glaucoma.—Konigstein (*Wiener Medizinische Blätter,* No. 2, January 1893), discussing the indications for the use of myotics in glaucoma, writes:—1. In the prodromal stage eserine tends to abort the attack. If a drop of the myotic is instilled into the patient's eye at the beginning of the symptoms, the attack will pass off in a short time, and thus the passage from the prodromal to the directly glaucomatous condition can be prevented, or at least deferred. One must not depend, however, too much upon this; and if there is danger of progress in the symptoms, surgical intervention is necessitated. 2. During the acute inflammatory stage, eserine is instilled to lower the tension, to relieve the suffering, and temporarily to dissipate the attack, if for any reason operation must be deferred. 3. The application of eserine is further indicated as a preparation for the operation. The dilated pupil is contracted, the surface of the iris enlarged, and the technique of the operation facilitated. Moreover, it gives the best indication of what portion of the iris to excite, as well as pointing out which portions of the iris are atrophied, by virtue of the fact that these areas are not influenced by the myotic action.—*Therapeutic Gazette,* April 1893.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Persistent Stigmata resulting from Cutaneous Disease.—Dr J. N. Hyde has written an interesting article on those morbid appearances of the surface of the body which are the persistent relics of cutaneous disease. Of such, scars occupy the first place. A disease that leaves a scar is a malady whose lesions have invaded and destroyed a few at least of those connective-tissue cells that are ingeniously woven into the basket-like structure we call the true skin. If in the early part of this century a large proportion of the faces of those one met were disfigured by the scars left by smallpox, it is pretty certain that were the passers by stripped it would be seen that at this day the scars left by syphilis would far outnumber those due to smallpox. In the scar of syphilis it is remarkable how delicately time smooths away the traces of what was once a formidable and threatening ulcer. Then, again, the scars are in circles, or parts of circles, giving us the semilunar, quarter-moon, and gibbous outlines. The pigmentation is peculiar. The colour in the cicatrices following freshly-healed ulcers is at first that simply of hyperæmia, dull-reddish, purplish-red, occasionally even pinkish-red. As the infiltration subsides the colour becomes more apparent, till we have every variation, from the deepest chocolate to the lighter brown, sometimes forming a species of pigmented halo. After a period lasting from a few months to as many years, the process of decoloration begins in these singular-looking stigmata, the difference in time depending largely upon the general vigour of the patient and upon the occupation, a prolonged observance of the erect posture being unfavourable to rapid removal of the colouring matter. A completely decolorized scar of the leg, wholly destitute of undue pigmentation, in a male patient of average weight and vigour, commonly points to a syphilitic infection from six to twelve years previously, but possibly one of an earlier era still. On the face the characteristic features are first lost, and it is there that confusion may most readily arise. The causes are—first, the frequent absence, for more than a few months at the most, of the pigmentation; second, the configuration of the folds of the skin of the face, making irregularities in the surface; and, third, the interference with the natural progress of repair, often mischievously directed, in order to overcome at an early hour the too evident impairment of personal comeliness. At no very remote date examiners for the military service of the United States Government were cautioned to search for scars on the penis as signs of chancres. These seldom are found, unless where continued irritation due to treatment, or more rarely gangrene, has occasioned an ulcer, or if the chancre is situated just within the meatus urinarius. The majority of cicatrices met with here are caused by chancroids. The scars left by zoster follow the lines of distribution of nerves,—on the face that of the fifth. Those left by a severe acne have often keloid-like ridges, into which several of them have been converted. The cicatrix in lupus vulgaris always possesses a distinguishing absence of special peculiarities, and at the present day is usually that produced by the treatment of the malady. If a visitor from another planet than ours, interested in our scientific methods, were to question one of us on the subject of these stigmata, one can imagine him saying, "As the internal organs of the body are all hidden from view within its living envelope, I suppose that most of your physicians are better acquainted with the diseases that are betrayed on the exterior than with those that affect the viscera,—such as, for example, the lungs, the liver, the heart, the kidneys, or the bladder." Imagine his surprise on hearing the response, "You are quite in error. The average physician on this planet we call the earth will frankly admit to you that he knows a great deal more of the disorders of internal organs than of those betrayed in the surface-markings of disease that are spread before his eyes."—*Philadelphia Medical News*, March 18th, 1893.

THE RELATIONSHIP OF DERMATITIS HERPETIFORMIS AND HERPES GESTATIONIS.—It has been claimed by Duhring, and supported by Brocq, that the herpes gestationis of authors is not an independent disease by itself, but is merely a phase of dermatitis herpetiformis, and a case related by Dr George T. Elliot goes far conclusively to prove this. A female, healthy with exception of occasional attacks of gastric dyspepsia, began to suffer in the third month of her last pregnancy from a skin disease, appearing first upon the feet, and then rapidly becoming universal, under the form of intensely pruritic blotches, coming in successive crops. When five months pregnant her husband died, and she experienced much anxiety and worry; the eruption assumed various types, till she miscarried at the seventh month. Temporary amelioration ensued, but in a few weeks a severe relapse occurred, and outbreaks and periods of comparative ease and quiescence alternated. At one time the lesions were made up of erythematous patches and groups of papules and vesicles, but eventually bullæ occurred more or less generally over the body, with crusts and scratch marks, and diffuse and small circumscribed pigmented areas, accompanied by itching and burning of different degrees of intensity. After lasting for nearly two years, an improvement in her material circumstances took place, her mind was relieved from vexation, and the complaint gradually disappeared. In all other recorded cases a temporary aggravation took place after delivery, followed by disappearance of the phenomena at the end of a few weeks, a chronic course becoming instituted only after a series of successive attacks developing during successive pregnancies.—*American Journal of the Medical Sciences,* November 1892.

LEPROSY IN BRITTANY.—Dr Zambaco, whose excellent works on the question of leprosy are well known, has just made a communication to the French Academy of Medicine, which was entirely unlooked for. For a long time he has been struck with the analogies which have seemed to him to exist between the symptoms of the new disease described under the name of Morvan's disease or syringomyelia and those of lepra as observed in Oriental lands. He decided, therefore, to carry out an investigation on the spot, from which he has arrived at the conviction that the disease described by Morvan in Brittany under the appellation of analgesic paralysis of the upper extremities with panaris or whitlow is nothing else than leprosy more or less modified or attenuated. Among patients affected with this disease, among the invalids who are known there by the name of Kakous, he found deformities, retractions of the fingers, various trophic disturbances, such as loss of phalanges, muscular atrophies, anæsthesias, ulcerations, onychias, etc.,—all symptoms which he regards as characteristic of leprosy. Dr Pitres has established the presence of the bacillus. Minute inquiries permit him to affirm that this disease has existed in Brittany from the most remote antiquity. At the present time it is observed only in extremely attenuated forms, and it stops, so to speak, in its first stages. We can thus understand how physicians who have not had a wide experience of leprosy have been led to regard it, as so manifested, as a new disease. While Zambaco has been the first to explain the cases of Morvan's disease in Brittany, MM. Rendu and Babinski had noted the connexion between syringomyelia and leprosy. They had taken note of a patient who, after a residence in Tonkin, had trophic disturbances of the skin of the feet, with atrophy of the muscles of the hand and forearm, and who exhibited at the same time the disturbances of sensibility associated with syringomyelia. He had, in addition, paralysis of the orbicularis palpebrarum and thickening of the ulnar nerve. M. Charcot, on seeing him, though with certain reserve, gave a diagnosis of leprosy.—*Annales de Dermatologie et de Syphiligraphie*, Decembre 1892 et Mai 1891; also *Journal of Cutaneous and Genito-Urinary Diseases,* January 1893.

PERISCOPE OF SYPHILIS AND GENITO-URINARY DISEASES.

By Francis Cadell, F.R.C.S. Ed.

The Therapeutic Importance of Prostitution.—There is a leader in the *Medical News,* December 3, 1892, on this subject. It quotes from Reuss in his work *La Prostitution,* published in Paris, 1889, which states that in New York there are from 13,000 to 15,000 prostitutes, and in Philadelphia a greater number. The number of prostitutes in the United States is estimated at 200,000. The question is asked—Can nothing be done to stay this flood of vice, crime, disease, and death? And if with the necessitarians one finds the only answer negative, the next question is—Has the evil no redeeming feature, no good or gain in the immense loss? An American doctor answers this question by saying that prostitution cures onanism. But the liability to syphilis is great from such illegitimate indulgence; the remedy may cause a worse disease. A suggestion is made in a satirical tone, that the doctors who prescribe this treatment for onanists should start private hospitals where the prescribed prostitutes might be certified as free from venereal disease. If such a hospital for the lauded sexual treatment of onanists were established and properly advertised, its financial success would be certain. A similar hospital might be started for the female onanist, with a sufficient supply of healthy able-bodied men to meet the needs of female clients. "Should the hiring of men and women suitable for sexual service be too expensive, an economical plan would be to let the male onanist minister to the necessities of the female onanist—in curing her he cures himself—and thus there would be brought about a happy combination of two conflicting theories of life, egoism and altruism!" The article finishes by describing this lauded addition to the physician's materia medica in one appropriate, though inelegant bit of expressive slang—*rot!*

SOME WAYS OF PREVENTING THE SPREAD OF SYPHILIS.—In a paper by Dr Allen, in the *New York Medical Journal*, Sept. 17, 1892, on this subject, the following is the text of an Act approved by the Legislature, June 11, 1891, which was originally suggested by Dr Fisher, in a very able article on the "Necessity for Social and Statute Recognition of Syphilis," read before the Massachusetts Medical Society, May 21, 1890:—

"[Chap. 420.]

"*An Act to provide for the Detention and Treatment of Inmates of Penal and Charitable Institutions who are Afflicted with certain Malignant Diseases.*

"Be it enacted, etc., as follows:—

"*Section* 1.—Any person who is confined in, or an inmate of, any State penal or charitable institution, a common jail, house of correction, or municipal or town almshouse, who shall have the disease known as syphilis, shall at once be placed under proper medical treatment for the cure of such disease, and when in the opinion of the attending physician it is necessary for the proper treatment thereof, or that such disease is contagious, so as to be dangerous to the health and safety of other prisoners or inmates of such institution, the persons under treatment shall be isolated from such other prisoners or inmates until the contagious stage of such disease has passed, or until the time when in the opinion of the attending physician such isolation is unnecessary.

"*Section* 2.—When at the expiration of the sentence of any person who is confined in, or is an inmate of, any of the institutions named in section 1 of this Act, such person shall then have the disease known as syphilis in its contagious or infectious symptoms, or in the opinion of the attending physician of such institution, or of such physician as the authorities thereof may consult, would cause the discharge of such person to be dangerous to public health and safety, such person shall be placed under proper medical treatment, and kept and suitably cared for as provided in section 1 of this Act, in the institution where he has been confined, until such time as in the opinion of the attending physician such contagious and infectious symptoms shall have disappeared, and the discharge of the patient shall not endanger the public health. The expense of his support, not exceeding three dollars and fifty cents a week, shall be paid by the city or town where he has a legal settlement, after notice to the overseers of the poor of such city or town, or, if he is a State pauper, after notice to the State Board of Lunacy and Charity, of the expiration of his sentence, and of his condition."

SKIN LESIONS OF SYPHILIS—THE SYPHILODERMATA.—In the *American Lancet*, May 1893, Dr Cautrell divides these skin lesions, for convenience, into—1st, erythematous; 2nd, papular; 3rd, pustular; 4th, tubercular; 5th, gummatous; 6th, bullous.

1. The erythematous syphiloderm shows itself between the fifth and seventh week after the appearance of the chancre, and lasts for from one to three months. It may be mistaken for lentigo or freckles, exanthemata, medicinal eruptions, tinea circinata, and tinea versicolor, and the pityriasis maculata et circinata of Duhring. Lentigo occupies the parts exposed to the sun. It is yellowish-brown from the first, and never scaly; the pigment is firm. The reverse of these conditions exists in syphilis. The absence of fever and the darker colour of the eruption distinguish this form of syphilis from the eruptive fevers. The medicinal eruptions have some fever and gastric disturbance, with an urticarial or œdematous character of the lesions, and some itching. In tinea circinata the lesions are not likely to be multiple. In tinea versicolor the lesions are more of a chocolate brown, and not of so extensive distribution. In pityriasis maculata et circinata the lesions are found in rings and maculæ of all sizes.

2. The papular syphiloderm is a small, hard, round, and raised lesion, of a raw-ham colour. It is likely to be at one time or another small or large, scaly or moist, or vegetating. Eczema may be distinguished from the moist variety by there being no lymphatic enlargement, sore throat, or falling-off of the hair. Psoriasis is scaly from the first. *Look* for signs of the initial lesion; do not ask the patient. Lichen planus congregates or localizes itself, and is itchy, which syphilis does not.

3. The pustular syphiloderm may develop from one of the other forms, or occur with them, and may be either pointed or flat, whether of the small or the large variety. Pustular eczema, which is likely to resemble this form of the syphiloderm, gives a history of decided crusting at all times, itching, and no bad odour. In syphilis there is decided ulceration, a bad odour, with crusts stratified, and always polymorphism. Syphilodermata, as a rule, are not limited to those regions affected by acne, as the face, chest, and back.

4. The tubercular syphiloderm shows lesions that vary from the size of a split-pea to that of a hazel-nut; they are smooth, glistening, round or pointed, of an intense copper colour, and may grow

singly or grouped, sometimes in circles or crescents, the so-called serpiginous or snake-like character; soon ulcerate and crust; are indolent, and appear late in the disease, the latter part of the second year; are often delayed as long as twenty or twenty-five years. In this variety other lesions are not found. Lupus vulgaris, which is likely to resemble this variety, lacks the history of contamination, does not begin late in life, does not ulcerate with punched-out appearance, and does not progress rapidly. Epithelioma, which resembles the ulcerating form, has one point of ulceration; is slow in forming; secretion scanty, bloody, and viscid; some infiltration; lancinating pains; ulceration most marked in centre.

5. The gummatous syphiloderm consists in a gummy deposit in the skin. At first freely movable under the finger. Its progress is slow; when the skin becomes affected it is not movable; found mainly on scalp and forehead; almost always ends in ulceration; should not be incised. It may be distinguished from faruncle and abscess by its slow, painless progress.

6. The bullous syphiloderm is a late lesion, and seldom seen. Pemphigus and dermatitis herpetiformis, which are likely to resemble it, present lesions containing serum and not pus, and the crusts do not show the horny or rupial character of syphilis.

URETHRAL STRICTURE IN WOMEN.—Loubeau (*Arch. de Tocol. et de Gynéc.*, April 1893) notes the great rarity of this disease compared to its homologue in men. Gonorrhœal stricture is almost unknown. H. Thompson maintains that the shortness of the female urethra saves it from the chief causes of stricture. Blum advances the yet more probable theory that stricture is rare because gonorrhœal urethritis is of short duration in women, and gonorrhœal stricture nearly always arises from chronic neglected gleet. Cicatricial stricture may follow ulceration caused by chancres, condylomata, and accidental or therapeutic cauterization; it may also be traumatic. This form is usually due to accidents during parturition, and may be accompanied by vesico-vaginal fistula. Loubeau describes a case of complete cicatricial stricture. The patient was 52. About five years previously she had a urethral caruncle; a surgeon removed it, and touched the wound with the actual cautery. Stricture not long after set in and increased, and recently attacks of retention occurred. The bladder was found to be greatly distended. Two small tubercles of cicatricial tissue lay below and to the right of the meatus, and a dense fibrous stricture lay one-fifth of an inch higher up the urethra. The finest bougies, whalebone or otherwise, could not be passed through it. Loubeau introduced a fine bistoury with its sharp edge uppermost, then cut into the stricture, and divided the anterior wall of the canal to the extent of an inch. The edge was then turned down and the floor of the urethra incised. Urine at once escaped freely. The two cicatricial tubercles were excised. Tampons checked the free hæmorrhage. The bougie was applied every fifteen days after recovery. Urine could be passed freely and without difficulty, but the patient was well warned of the dangers of neglecting catheterization.—*British Medical Journal*, June 10, 1893.

SYMPHYSIOTOMY IN BLADDER OPERATIONS.—Wickhoff (*Wien. klin. Woch.*, No. 11, 1893) states that in consequence of the frequently-experienced difficulty in suprapubic cystotomy for vesical tumour of freely exposing the seat of the disease, several attempts have been made to render the affected portion of the bladder more accessible by temporary or partial resection of the anterior part of the bony pelvis. This difficulty, however, may, he thinks, be overcome by resorting to a less formidable procedure. The recent experience of symphysiotomy in obstetric practice, by which it has been proved that this operation is neither dangerous in itself nor likely to cause any subsequent trouble in locomotion, has led the author to consider the advisability of practising it in suprapubic cystotomy with the object of rendering the interior of the bladder more accessible. He describes an operation he has performed on the cadaver, in which, after complete section of the symphysis and separation of the pubic bones, the anterior surface of the bladder is so freely exposed that an incision may be made through the anterior wall of this viscus, about 4 inches in length, and reaching to a point about 1 inch above the internal orifice of the urethra. Every part of the interior of the bladder was thus exposed, so that it was found possible without difficulty to resect the lower extremity of one of the ureters, to excise a piece of the lowest portion of the posterior wall of the bladder, and to seize with forceps and cut away the middle lobe of the prostate. Symphysiotomy, the author states, is especially indicated, not only in the rare cases in which a tumour is seated on the anterior wall of the bladder, but also in the more frequent instances of a tumour growing from the inferior portion of the posterior wall. It would be found useful, also, he thinks, in operations for vesico-vaginal fistulæ. Transverse incision of the anterior wall of the bladder is held to be objectionable, and section of the recti muscles is apt to result in a tendency to hernia. In dealing with objections to his proposal, the author states that the length of the wound in the bladder would not increase the dangers of suprapubic cystotomy, provided proper care be taken to close this by well-prepared and closely-applied sutures. With regard to the risks, both immediate and remote, of division of the symphysis, it is pointed out that the almost universal testimony of obstetricians to the rapid and perfect consolidation of this structure after forcible separation affords a proof that symphysiotomy does not in itself constitute a serious complication in the operation on the bladder.—*British Medical Journal*, June 10, 1893.

Part Fifth.

MEDICAL NEWS.

ROYAL COLLEGES GOLF CLUB *versus* SCOTTISH BAR.

A MATCH by holes, two rounds of the green, was played on June 3rd at Muirfield, between a team of ten a-side from the Royal Colleges Golf Club and the Members of the Scottish Bar. The match resulted in a victory to the Medicals by 11 holes.

Royal Colleges Golf Club.	Holes.	Advocates.	Holes.
Dr Blaikie,	0	Mr A. Stewart,	15
,, Argyll Robertson,	5	,, A. O. Mackenzie,	0
,, Haultain,	8	,, F. Kinloch,	0
,, A. Thomson,	8	,, Henry Johnston,	0
,, Finlay,	0	,, Oliver,	0
,, Ronaldson,	0	,, Aitken,	1
,, Stitt Thomson,	0	,, T. Rutherfurd Clark,	3
,, Wallace,	0	,, Kermack,	0
,, G. M. Robertson,	0	,, J. Fleming,	1
,, Boyd,	10	,, Hepburn Millar,	0
	31		20

THE TUBERCULAR CONGRESS AT PARIS.—The first meeting of the Congress for the discussion of tuberculosis, under the auspices of a permanent Committee, took place at Paris in 1888, under the presidency of Professor Chauveau. The second was held at Paris in 1891, under the presidency of Prof. Villemin. The Congress meets for the third time, this year, in the same city, from July 27th to August 2nd, under the presidency of Professor Verneuil. It seems a pity that the organisers of this excellent movement continue to pursue the rather insular policy of insisting that all communications and remarks should be made in French. The subjects for discussion include the relation of contagion and heredity in the propagation of the disease, the part played by infectious diseases as predisposing agents, especially in respect of the localization of the tubercular attack, the significance of the pauses which occur in the course of tuberculosis, the means of diagnosing bovine tuberculosis, especially the value of tuberculin in this respect, the dangers which accompany the burial of tubercular cadavera, recent therapeutic methods, both prophylactic and curative, and the value of a general system of inspection of meat. Visits will be made to the leading laboratories, hospitals, and veterinary institutions. The Congress is open to medical practitioners and veterinary surgeons from all countries. Intending members should communicate with M. G. Masson, 120 Boulevard St Germain, Paris. A contribution of 20 frs. entitles the subscriber to the privileges of the Congress, and to a copy of the published Transactions.

In the *Indian Medical Record* for February 1, 1893, Dr Mitra refutes Mr Ernest Hart's opinion that the last epidemic of cholera started "from its great focus in Kashmir." He says that only those whose knowledge of Central Asian geography is not clear could think that with its isolated position Kashmir could be the means of sending cholera to Europe.

Dr H. D. Paul, in the *Indian Medical Record*, Jan. 16, 1893, relates a case of the unique action of quinia.—He gave a patient 5 grains of the drug, with the result that next morning "there were ulcers in the palate, large herpetic eruptions on the lips, corona of the penis and the prepuce." The same thing had happened to the patient thrice previously.

The Use of Salol in Cholera.—In the *Indian Medico-Chirurgical Review*, January 1893, Dr N. H. Chosky strongly advises the administration of 10-grain doses of salol, with 2 drachms of brandy, half a drachm of the essence of peppermint, and an ounce of chloroform water. In his hands it appears to have almost instantaneously stopped the vomiting, and has apparently reduced his mortality to 38·5 per cent., which, taking into account the condition of his patients when admitted into his hospital, he considers very favourable.

Referring to M. Haffkine's anti-choleraic inoculations, the editor of the *Indian Medico-Chirurgical Review* for March writes as follows:—"We learn with surprise that all the experiments and investigations conducted by him (M. Haffkine) were at his own expense, and that the cost of his visit to this country (India) would be borne by M. Pasteur and himself, and that he has received no more substantial aid from the British Government than 'warm official recommendation,' which we are afraid would not go very far in recompensing this disinterested and able young physician. It is, indeed, strange that when the majority of the French people rail at '*la perfide Albion*,' a French *savant* should place at the disposal of a *Russian* physician the resources of his Institute, and contribute to the expenses of a journey undertaken in the interests of the people of India over whom the British rule; and stranger still that, of all, a Russian should be a messenger of good to this country. This once more illustrates the cosmopolitan nature of the science which recognises no distinction of race, religion, or country."

In the *Scottish Geographical Magazine* for June 1893 there is a remarkably good paper on "Malaria and Acclimatisation," by Dr H. Martyn Clark, Medical Missionary at Amritsar. Some of his remarks upon the prevention of malaria by the judicious plantation of trees are well worthy of attention. He does not think highly of the eucalyptus in this connexion, but he strongly recommends trees known as the "shade bearing" species, with dense crowns which effectually screen from malarial-laden winds, intercept a large proportion of the rainfall, and completely protect the earth from the sun. He recommends the Picus Indica (banyan), the Ficus religiosa (Peepul), and, amongst fruit trees, the noble mango and others of the Anacardiaceæ. He claims to be the first to draw attention to the exceptional value of the plantain tree, as possessing unique capabilities for the reclamation of malarious land.

In *The Medical Reporter*, March 1st, 1893, there is a very good paper by Dr N. C. Millar on "Typhoid Fever among the Natives of India." The writer points out that the typical landmarks as given in the usual text-books are rarely seen when the disease occurs in natives. The onset, diagnosis, and treatment of typhoid fever are discussed, and seven well reported cases are given to illustrate the author's position. Phenacetin is used by Dr Millar to keep the temperature within bounds. He has tried carbolic acid without the least success, and has therefore abandoned that line of treatment. In the same journal there is a paper by Surgeon-Captain Ross offering some objections to the "Hæmatozoic Theories of Malaria," which is well worth attention.

At a meeting of the Leeward Islands Branch of the British Medical Association on February 9, 1892, Dr A. P. Boon exhibited two perfect examples of Albinoes, the children of negroes. The father of the children stated that his uncle's wife always bore twins, of which one was white and the other black. Dr W. J. Branch at the same meeting mentioned the case of a black man who suddenly lost all his pigment and became quite white. The skin was not the "dead white" of leucoderma, but was of a pinkish semi-translucent character—a true case of albinism.

21,389 persons were killed by snakes in India in 1891 as compared with 21,361 in 1890. It is said that in many places in India snakes are bred with the object of getting the Government reward for all snakes killed. The abuse is so great that it is proposed to abolish the system of rewards.

PUBLICATIONS RECEIVED.

R. S. Aitchison, M.B., C.M., etc.,—A Medical Handbook for the use of Practitioners and Students. Chas. Griffin & Co., London, 1893.

Dr Vincenzo Allara,—Sulla Origine dei Corpuscoli del Sangue. Presso la Libreria Editrice Galli, Milano, 1893.

A. Wynter Blyth, M.R.C.S., etc.,—Lectures on Sanitary Law. Macmillan & Co., London and New York, 1893.

Charles Gilbert Chaddock, M.D.,—Psychopathia Sexualis, with especial reference to Contrary Sexual Instinct. By R. von Krafft-Ebing. Translation of the Seventh German Edition. The F. A. Davis Co., Philadelphia, 1892.

Dainty Dishes for the Sick Room. By a Physician's Wife.

Prof. E. Delorme,—Traité de Chirurgie de Guerre. Vols. 1 and 2. Félix Alcan, Éditeur, Paris, 1893.

Diet Charts. H. K. Lewis, London.

Prof. E. Doyen,—Traitement Chirurgical des Affections Inflammatoires and Néoplasiques de l'utérus et de ses Annexes. Paris, 1893.

Edinburgh Hospital Reports. Edited by Drs G. A. Gibson, C. W. Cathcart, John Thomson, and D. Berry Hart. Vol. 1. Young J. Pentland, Edin. & Lond., 1893.

F. Gustav Ernst,—On the Application of Suitable Mechanism to a Case of Amputation of Both Hands. Sprague & Co., London, 1893.

Fourth Annual Report of the Derby Borough Asylum for 1892. Derby, 1893.

Ernest Hart,—Hypnotism, Mesmerism, and the New Witchcraft. Smith, Elder, & Co., London, 1893.

Prof. Barton Cooke Hirst, M.D., and Prof. George A. Piersol, M.D.,—Human Monstrosities, Part 4. Lea Brothers & Co., Philadelphia, 1893.

Thomson Jay Hudson,—The Law of Psychic Phenomena. G. P. Putnam's Sons, London.

Journal of the Scottish Meteorological Society. Third Series, No. 9. Wm. Blackwood & Sons, Edin. & Lond.

J. H. Kellogg, M.D., etc.,—Methods of Precision in the Investigation of Disorders of Digestion. Modern Medicine Publishing Co., Mich., 1893.

Prof. Paul Lefert,—La Pratique Dermatologique et Syphiligraphique des Hôpitaux de Paris. Librairie J. B. Baillière et Fils, Paris, 1893.

J. Leibig and H. Kopp,—Jahresbericht über die Fortschritte der Chemie und verwandter Theile anderer Wissenschaften. Williams & Norgate, Lond., 1893.

Arthur H. N. Lewers, M.D., etc.,—A Practical Text-Book of the Diseases of Women. H. K. Lewis, London, 1893.

Greville Macdonald, etc.,—A Clinical Lecture on Hay Fever and Asthma. A. P. Watt & Son, London, 1893.

Jonathan F. C. H. Macready, F.R.C.S., etc.,—A Treatise on Ruptures. Charles Griffin & Co., London, 1893.

Prof. J. Dixon Mann, M.D., F.R.C.P., etc.,—Forensic Medicine and Toxicology. Charles Griffin & Co., London, 1893.

A. Muller, M.D.,—On Snake-Poison: its Action and its Antidote. L. Bruck, Sydney, 1893.

Andrew Scott Myrtle, M.D., etc., and James Aitken Myrtle, M.D., etc.,—Practical Observations on the Harrogate Mineral Waters and Chronic Diseases. Robert Ackrill, Harrogate, 1893.

William Odell, F.R.C.S. Eng.,—Recreation. Simpkin, Marshall, Hamilton, Kent, & Co., London, 1893.

Alexander Peddie, M.D., etc.,—Recollections of Dr John Brown, Author of "Rab and his Friends," etc., with a Selection from his Correspondence. Perceval & Co., London, 1893.

Prof. Wm. Pepper, M.D., LL.D.,—An American Text-Book of the Theory and Practice of Medicine. Vol. 1. W. B. Saunders, Philadelphia, 1893.

John Phillips, M.A., M.D., etc.,—Outlines of the Diseases of Women. Chas. Griffin & Co., Limited, London, 1893.

Prof. W. S. Playfair, M.D., LL.D., etc.,—A Treatise on the Science and Practice of Midwifery, 2 vols. Eighth Edition. Smith, Elder, & Co., London, 1893.

George Vivian Poore, M.D., etc.,—Essays on Rural Hygiene. Longmans, Green, & Co., London, 1893.

Prof. S. Pozzi, M.D.,—A Treatise on Gynæcology, Clinical and Operative. Vol. 2. The New Sydenham Society, London, 1893.

Report on Incubation and Contagion. Supplement to Vol. 25 of the Transactions of the Clinical Society of London. Longmans, Green, & Co., Lond., 1892.

J. James Ridge, M.D., etc.,—Alcohol and Public Health. Second Edition. H. K. Lewis, London, 1893.

Dr Schuster,—When may Syphilitics Marry? Edited and Translated by Dr C. Renner. F. J. Rebman, Lond., 1893.

Selected Monographs on Dermatology. The New Sydenham Society, London, 1893.

Seventh Annual Report of Holloway Sanatorium Registered Hospital for the Insane for the year 1892. John Barker & Co., London, 1893.

John V. Shoemaker, A.M., M.D., etc.,—A Practical Treatise on Materia Medica and Therapeutics. Second Edition. 2 Vols. The F. A. Davis Co., Philadelphia, 1893.

Herbert Snow, M.D. (Lond.), etc.,—A Treatise on Cancers and the Cancer-Process. J. & A. Churchill, London, 1893.

Albert Taylor,—The Sanitary Inspector's Handbook. H. K. Lewis, London, 1893.

William Tebb,—The Recrudescence of Leprosy and its Causation. Swan Sonnenschein & Co., London, 1893.

The Disease of Inebriety from Alcohol, Opium, and other Narcotic Drugs. John Wright & Co., Bristol, and Simpkin, Marshall, Hamilton, Kent, & Co., Lond., 1893.

The First Annual Report of the Sheppard Asylum. Baltimore, Md., 1893.

The Johns Hopkins Hospital Reports, Nos. 4, 5, 6. Report in Pathology, 3. Baltimore, 1893.

The State and its Servants. Edited by Ernest Hart. Smith, Elder, & Co., London, 1893.

Thirty-second Annual Report of the Cincinnati Hospital for year ending December 31, 1892. Cincinnati, 1893.

Transactions of the American Orthopedic Association. Sixth Session, Vol. 5. Philadelphia, 1893.

Transactions of the American Pediatric Society, 4th Session. New York, 1893.

Transactions of the Fourteenth Annual Meeting of the American Laryngological Association, held in Boston, June 1892. D. Appleton & Co., New York, 1893.

Transactions of the Obstetrical Society of London. Vol. 34, Part 4, 1892. Published by the Society.

Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Tenth Annual Issue. Charles Griffin & Co., Limited, London, 1893.

Oswald Ziemssen, M.D., etc.,—The Treatment of Constitutional Syphilis. H. K. Lewis, London, 1893.

Part First.

ORIGINAL COMMUNICATIONS.

I.—OBSERVATIONS UPON DISEASE OF THE APPENDIX VERMIFORMIS AND ITS RESULTS.

By J. O. Affleck, M.D., Lecturer on Practice of Physic and on Clinical Medicine, Edinburgh Medical School; Physician to the Royal Infirmary, Edinburgh.

(*Read before the Edinburgh Medico-Chirurgical Society, 3rd May* 1893.)

In inviting the attention of the Society to-night to the subject of disease of the appendix vermiformis and its results I would desire to state three reasons in justification,—1st, The intrinsic interest which attaches to the disease; 2nd, its serious nature and comparative frequency of occurrence; and, 3rd, the fact that in this Society there is the opportunity for discussion, both from the medical and surgical aspects, to which the subject so readily lends itself.

The purpose of the present communication is less to give any systematic account of the pathology and clinical history of this malady, which would occupy more time than is available, than to record the results of observations I have had opportunity of making on a somewhat extensive recent experience of cases, since in the space of little over a twelvemonth I have had under my own care, or seen in consultation, about twenty well-marked examples of appendix disease. Further, these observations are offered with due reserve, and the views stated are open to correction and modification by light coming from any source.

In looking back over what is now a lengthened period as a student, a practitioner, a teacher, and an examiner, I confess to having had, until comparatively recently, very vague and unsatisfactory ideas of the conditions described and taught as typhlitis and perityphlitis. I had understood in a general way that typhlitis meant an enteritis affecting the cæcum as a whole, and perityphlitis an inflammation with exudation in the cellular tissue around the cæcum, that the conditions might be conjoined or separate, that they often resulted from cold, and that they might be predisposed to or even caused by fæcal accumulations in the cæcum, or by foreign bodies lying there. It always, however, seemed difficult to understand why similar causes affecting other portions of the intestinal tract, particularly the large intestine, were not followed by like results. Within the last ten or fifteen years, however, much has been done to place the subject upon a basis of scientific fact; and this is one of the many gains which medicine owes to the modern practice of abdominal surgery, since not only has it been thus proved that the vast majority of cases of what was designated typhlitis and perityphlitis are due to lesions of the appendix vermiformis, but it has been shown that even grave forms of this disease may be brought within the reach of successful treatment, which before were regarded as absolutely hopeless, and only to be left to die with such mitigations as the constant exhibition of opium might afford.

As contributing to bring about this result the work of American practitioners stands pre-eminent. Among these the names of Bull, Fitz, M'Burney, Senn, Lewis Smith, Porter, Richardson, Morton, out of a large number of distinguished physicians and surgeons, may be mentioned. The subject has been largely discussed in the medical societies of America, and much light has been thrown upon it, alike as to its pathology and treatment. In France, Talamon; in Switzerland, Roux; in Germany, Biermer and Matterstock, have all made important additions to our knowledge of the subject, but assuredly none more than our own countryman Mr Treves.

At the outset it must be distinctly stated that, while inflammatory symptoms and swellings in the right iliac fossa may be due to many other causes than disease of the vermiform appendix, it is the object of this paper to deal only with this latter class of cases. The modern term "appendicitis" is not one to be much commended; but it is at least more accurate than "typhlitis," and is the most convenient term for expressing the actual facts of the disease,—viz., inflammation of the appendix vermiformis, leading to various results more or less serious in their character.

As probably no portion of the intestinal canal is more frequently the site of acute, severe, and fatal disease than the appendix vermiformis, it is obvious that there must be some inherent or some associated cause which renders it a source of special danger. Not a few writers profess to find this in the fact that its position and structure so readily renders it a trap for the reception of foreign bodies, the lodgement and pressure of which within its canal are the one source of the symptoms. It is undeniable that this is one important origin of appendicitis, but it would be too much, as we shall see, to assume that it is the only one. It is highly probable, to say the least, that there are other and accessory causes.

The appendix vermiformis, as is well known, is held to be the atrophied representative of the large cæcum of certain of the lower animals. Its uses in the human subject are unknown. Its usual situation is in the posterior and lower part of the cæcum, to which it is attached by a mesentery. It is surrounded with peritoneum, and its free extremity may be variously directed,—a point of importance as bearing upon the local evidence of its diseases. Its opening into the cæcum is protected by a fold of mucous membrane, which, however, is an imperfect valve, and may not be sufficient to prevent foreign bodies or concretions getting into it, while at the same time it may readily participate in any inflammatory or other morbid condition which may be present in the portion of the large intestine with which it is connected. It appears to undergo atrophic changes as age advances, and its canal to become smaller.

Inflammation of its substance, with all that may follow thereon, is the disease to which it is specially liable, but many things in the etiology of this lesion remain unexplained. It is four times more common in males than in females, and the vast majority of the cases occur in early life, the number being nearly equal in the decades 10–20 and 20–30. Before 10 it is not so common, although frequently enough seen; and, on the other hand, in late life it is exceedingly rare. Both of these facts (as to age and sex) seem somewhat against the view that mere feculent impaction of the cæcum—which is not very usual in these circumstances—plays any necessary part in the development of the disease, and rather suggest the possibility of some favouring anatomical condition of this structure existing in early life, which lessens as age advances, affecting the appendix, its canal, or its attachment. On the other hand, it is to be remembered that by far the greater proportion of concretions which are found in the appendix are fæcal in character, so that their presence requires to be accounted for. This leads us to a closer consideration of some points in the morbid anatomy and pathology of appendicitis.

The changes in the appendix, even those occurring in the commencing stage, have been observed especially by American surgeons, some of whom, as is well known, have advocated and practised early operation, while the more advanced and relapsing cases are frequently enough seen in connexion with operations which most surgeons are in the habit of performing when the condition appears to call for it.

It would seem, then, that the appendix may simply be enlarged and inflamed as the result of a catarrhal process, either extending from the cæcum, or it may be set up by the presence of a concretion. Along with this there may be some amount of peritonitis affecting the appendix itself, the cæcum, and the surrounding intestines; or it may be a cellulitis in the subperitoneal cellular tissue, forming the hard swelling so frequently met with. But, again, the changes in the appendix may be of more serious character, in the form of adhesions, torsions, suppuration, ulceration, perforation, and even gangrene. In such instances, not only is there surrounding localized peritonitis, but not infrequently a collection of pus, which may be walled in by adhesions, and find its way either internally into a viscus or externally on the surface;

or, again, may burst through its boundaries into the general peritoneal cavity.

M. Talamon contends that the disease of the appendix and its results—peritonitis, abscess, perforation, etc.—are in all but the most exceptional instances produced by small fæcal masses or scybala which, finding their way into the canal, set up irritation in the milder cases, or, as in the severe cases, exercise such an amount of compression as seriously to interfere with the circulation in its walls, leading to ulceration or gangrene. Moreover, he holds that septic microbes, which develop freely in the imprisoned contents of the appendix, have much to do both in determining the destructive change in its walls and in surrounding abscess formation. The small scybala referred to are believed not to be formed in the appendix, since they are rarely moulded into the shape of the canal, but are generally rounded; and M. Talamon believes they are formed by precipitation in the folds of mucous membrane in the large intestine in cases of atony of this part of the canal. The failure to find these scybalous concretions in many cases he accounts for by the theory that they may be expelled out of the appendix back into the cæcum, or that they may be dissolved *in situ*.

While there is much plausibility in this theory, and although the presence of fæcal concretions is made out in a large number of cases in which, to all appearance, they have been the direct agents in producing the lesion in the appendix, it cannot be accepted as universally applicable in view of ascertained facts. Thus, of 146 cases in adults recorded by Matterstock, in only 63 were fæcal concretions met with, and foreign bodies in 9; while in the remainder—that is, one-half—nothing of this nature was found. In 49 cases occurring among children, fæcal concretions were present in 27, and foreign bodies in 3. A considerable burden of proof, therefore, must rest upon those who hold exclusively this mechanical theory.

Torsion of the appendix has been dwelt upon by some authorities, notably by Mr Treves, as explaining the morbid changes. If the mesentery of the appendix be scanty, torsion may readily occur, and with it an interference with the blood-supply, compression of the walls of the tube, distention with mucus of the distal portion, in which concretions may form, with ulceration there or at the seat of the bend. In extreme cases of torsion occurring either suddenly or gradually, gangrene may be the result. Mr Treves points out how over-distention of the cæcum may favour the twisting of the vermiform appendix by dragging upon its mesentery. It is very noteworthy that in a large number of Mr Treves's operations this distortion of the appendix vermiformis was present. At the same time, it might be fairly open to question whether in some, at least, of these cases the torsion observed might not be an effect of antecedent peritonitis producing contractions in the mesentery with distortion of the appendix. In none of my cases in which operations were performed could I say that torsion of the appendix existed to any marked degree, although in one the extreme acuteness of the symptoms was reconcilable with such a condition, which might later on have undergone relaxation.

Ulcers, which are sometimes found apart from concretions or torsions, may be tubercular or—especially those close to the junction of cæcum and appendix—stercoral in origin. I have not seen any instance of typhoid ulcers there, although they have been described. Foreign bodies are certainly rare.

Upon the whole the probability seems to be that appendix disease may result from various causes, some more apparent than others, and that this small body possesses a vulnerability peculiarly its own. I am not aware whether its minute anatomy has been fully worked out in relation to its nutrition, but it seems a not unreasonable conjecture that being, so to speak, an effete or unused structure, it lacks the natural vitality of the rest of the alimentary canal, which is in constant functional activity. So that a morbid process commencing may readily pass on to further and destructive change. Ulcers here appear, more than in any other part of the intestinal canal, to tend to perforation—a proof itself of low vitality of texture—although, no doubt, their course is often arrested by adhesive inflammation outside in the peritoneum.

The symptoms characterising appendicitis—varying, as they must necessarily do, in relation to the form, extent, and duration of the disease—cannot be dwelt upon in any great detail; but looking at them mainly from the physician's point of view, it seems the simplest method to quote a few particulars from one or two cases fairly illustrative of the typical examples of the disease, and to make a few comments upon them.

Case I.—*A Case of Simple Appendicitis with Localized Peritonitis.*

T. W., æt. 19, plumber and gasfitter, was admitted to Ward 29, June 13, 1892, suffering from severe pain in lower part of abdomen, accompanied with vomiting, which had lasted for two days. Patient, who was a healthy-looking lad, and had never before suffered from any serious illness, states that two days ago he awoke at 6 A.M. feeling a severe pain in the abdomen in the region of the umbilicus and downwards towards the right iliac fossa, accompanied with headache and vomiting, which continued at intervals up till the time of his admission on the 13th. The bowels had acted after castor oil, which had been given at the outset.

The day before the commencement of the symptoms the patient states he had left off some of his clothing owing to the warm weather. He had had also a hard day's work carrying lead up from the street to a house-top where he was working. He thinks he was probably chilled, and also that he may have strained himself.

On examination the patient was lying with his left leg extended and his right drawn up, which is his easiest position. Lying on the left side increases the abdominal pain. The abdomen is tense, but not prominent. There is now less pain and tenderness than there was two days ago. Light percussion gives a tympanitic note all over, except in the right iliac and lumbar regions, where the note is duller. On careful palpation in the right iliac fossa a firm swelling is felt, which runs up from above Poupart's ligament for about 2½ inches parallel to the linea alba. It is about 3 inches broad, and is tense to the feel, but there is no fluctuation. The right side of the abdominal wall, as a whole, is distinctly tenser than the left. The swelling does not seem to alter its position on moving the patient on to the left side.

The tongue is red at tip and edges, but is covered on the dorsum with a creamy fur. The temperature is 102°, and the pulse 80. There are no other morbid symptoms, excepting some pain at the end of the act of micturition, owing to the slight strain upon the abdominal muscles. The treatment consisted in the administration of 1 gr. of opium in powder, warm opium fomentations to the abdomen, and milk diet. The patient was markedly relieved as regards his pain, but the swelling in the right iliac fossa became rather more distinct and hard. The temperature continued to vary from 99° to 101° till the 23rd June, when it fell to normal, where it remained until he left the hospital, which he did on 27th July, the swelling in the right iliac fossa having gradually become less, until no trace of it remained. The patient has continued well up till the present time.

This case represents the most common form of the disease, and that with which we are all familiar. The swelling in the right iliac fossa, which sometimes runs up along the course of the cæcum and ascending colon, is very suggestive of fæcal impaction, and may, indeed, sometimes be partly so. But it is undoubtedly for the most part the result of plastic lymph exudation,—in other words, a local peritonitis, sometimes, however, a cellulitis in the retro-cæcal cellular tissue. Such cases, under such treatment as that described, mostly recover in from three to six weeks.

Occasionally symptoms of the kind described occur without the swelling, as in the case of a gentleman at present under my care, who since September last has had no fewer than four attacks, each lasting for only a day or two, but strongly suggesting either acute catarrh or torsion of the appendix. It is noteworthy, in reference to the pain, that it is often of two forms,—the local pain and tenderness, and a general severe colicky pain (called by Talamon *colique appendiculaire*), which is very common and characteristic, and is probably largely of reflex origin. It soon subsides.

Case II.—*A Case of Subacute or Chronic Appendicitis with Ulceration and Perforation supervening.*

C. N., æt. 20, cabman, admitted to Ward 29, May 23, 1892, suffering from very severe pain in the lower and right part of abdomen, accompanied with vomiting, which had lasted for a fortnight. He had had no illness of importance up till the age of 14, when he received an accidental kick on the lower part of the abdomen when playing football. He was laid up for a fortnight at that time, and suffered from bladder symptoms, which have at times troubled him ever since. About three years ago he had an attack like his present one, which he states was brought on by a strain, and which laid him up for three weeks. Seventeen months ago he had a second attack of the same description, for which he was treated both at home and in the Royal Infirmary, and although he appeared to get over this, he has never felt perfectly well, being easily fatigued, and occasionally troubled with vomiting and with constipation.

His present illness began a fortnight ago—9th May 1892—when he was seized with severe pain in the right iliac and lumbar regions, accompanied by vomiting, which have continued more or less ever since. For a fortnight previously there had been extreme constipation.

The patient, on admission, although well-developed and muscular, looked very ill. His face bore the expression of great suffering, and was somewhat pinched. His temperature was 101°·4; pulse 124, feeble. There was no distention of the abdomen, but there was great tenderness all over,—apparently, however, more in the right iliac fossa, in which some resistance was felt, and a dull note elicited on percussion. The patient was, however, too ill to bear any very careful examination. Opium internally and hot opium fomentations externally gave great relief, and on the day after admission the patient's condition was decidedly better, both temperature and pulse having fallen. On the 25th, however, the symptoms again assumed a severe form, vomiting, with violent retching and hiccough, having set in. On visiting the patient in the afternoon I came to the conclusion that surgical interference alone could be of any avail, and my colleague Mr Cathcart being in the Infirmary at the time, kindly came and saw him with me, and concurred in the necessity for immediate operation. Mr Cathcart opened the abdomen in the right linea semilunaris, and on cutting into the peritoneal cavity a large escape of pus occurred, evidently from an abscess, out of which there came a fæcal concretion about the size of a pea. The vermiform appendix was found greatly inflamed, swollen, covered with lymph, and adherent to surrounding parts. As much as could be got at was removed, and the stump carefully stitched. No perforation was found in the excised portion, but on examination of the cæcal extremity a distinct perforation was discovered just at the junction of the appendix with the bowel. This Mr Cathcart closed by sutures with considerable difficulty. After washing with a weak boric lotion the wound was closed, a drainage-tube being left in. The patient bore the operation well, and continued to go on favourably during the greater part of the next day (May 26), but towards night became worse, vomiting recurred, and he died at 3 A.M. on the 27th. *Post-mortem* examination showed the abscess cavity, together with much old peritonitis in the neighbourhood of the cæcum and appendix. The stitched perforation remained firmly closed.

This case I regard as a chronic or subacute appendicitis. It was at least the third attack within three years, but perforation and suppuration had probably not occurred till quite recently, and the abscess was well walled in. There had been no escape of pus into the general peritoneal cavity. The case was unfavourable from the day of his admission, owing to his extremely depressed state. It is just possible, however, that earlier surgical interference might have been more successful. The diagnosis was comparatively easy in this case, from the history and locality of the symptoms.

CASE III.—*A Case of Extremely Acute Appendicitis, with Gangrene, Perforation, Abscess Formation, and General Septic Peritonitis; Recovery.*

A. W., æt. 20, grocer's assistant, was admitted to Ward 29 on Sunday, 26th June 1892, suffering from severe abdominal pain and tenderness, together with vomiting and constipation, which had continued since the evening of Friday, 24th. Patient states that on the morning of that day—having previously been in perfect health —he had slight abdominal pain and nausea while at breakfast, but that it passed off, and he went to his work as usual. In the afternoon he was engaged for several hours in cutting grass with a heavy lawn-mower, when he began to suffer from severe pain in the abdomen, which compelled him to stop, and he had great difficulty in making his way home. Severe retching came on, and this and the pain were treated with fomentations, which gave no relief, and all during that night and Saturday the symptoms continued with no abatement. Castor oil had been administered without effect. Late on Saturday night a medical man was called in, who prescribed various remedies, including an enema; but the patient's condition remaining unchanged, he sent him into the Royal Infirmary under my care on Sunday forenoon, 26th June. On admission the patient looked exceedingly ill. His temperature was 102°, his pulse 112. The abdomen was not distended, but rather flat and board-like, and extremely tender all over,—sometimes specially so in the right iliac region, sometimes just over the stomach. Vomiting occurred at intervals. The usual remedies, viz., opium internally and externally, were applied, with, however, but little result; and on Monday morning, 27th June, it was quite manifest that the patient's condition was much worse. His face was haggard and pinched, his surface livid, and the vomiting now was in the form of frequent welling up of a dark-brown fluid, while hiccough occurred from time to time. I came to the conclusion that some serious accident had occurred within the abdominal cavity, and that unless surgical interference were speedily resorted to, the patient could not possibly live through another night. The one point of encouragement for procedure of this kind lay in the patient's pulse, which, although quick and small, was quite steady, and had not that "running" character often so ominous in such conditions. I accordingly requested my colleague, Mr Duncan, to see the patient, and he agreed with me in the view of the case, and the necessity for immediate operative interference. As soon as possible the consent of the patient and his friends was obtained. The absolute suddenness of the illness, and the want of definite localization of the symptoms, made the diagnosis uncertain, and it was accordingly resolved that in the first instance an exploratory abdominal incision should be made. This was done at 5.45 P.M., an incision being made in the linea alba. Extensive peritonitis was seen, all the intestines in view being either extremely congested or coated with thick yellow lymph and bathed in pus. A large gush of fœtid pus escaped from the right iliac fossa, whereupon Mr Duncan made a counter opening over this region, and evacuated the large abscess. The appendix was got without much difficulty. It was free, but found to be much swollen, and at one part quite black and gangrenous. A perforation was found near its junction with the cæcum. The appendix was ligatured and cut across, and the abdominal cavity washed with warm boric lotion. Two glass drainage-tubes were inserted, one in each wound, but the wounds were not sutured. The patient rallied from the shock of the operation (which occupied about 1½ hour), and the former urgent symptoms abated; but four days after he was seized with pneumonia, evidently of septic character, accompanied with fever, cough, and copious rusty expectoration. His condition now became exceedingly grave, and it seemed as if death were imminent, when he began again to show better symptoms, and the attack wore off. Two others of the same followed shortly afterwards, and again passed off; but the patient now fell into a state of extreme prostration, with symptoms plainly indicating the existence of general septicæmia, during which the wound, which had begun to heal, opened out, the bowels protruded, and the patient's condition became truly desperate. It seemed impossible he could live. Notwithstanding, he struggled on for many weeks, when, thanks to the instrumentality of admirable nursing on the part of the special nurse in charge of him, and to the assiduous attention of my house-physician Dr Brough, and Mr Duncan's house-surgeon Dr Jones, a favourable change set in, the healing process went on apace, and the patient was dismissed from the

Infirmary on 5th September 1892, perfectly well. I have now the pleasure of showing this patient to the Society. It will readily be seen how thoroughly well and strong he is. He is now working as a light porter. (Slight ventral hernia at extremity of one of the incisions.)

One point deserving special attention in this case was its extreme acuteness. The patient has repeatedly assured me that up till the Friday, two days before his admission, he had had no pain nor discomfort whatever. The questions are: first, did all this—gangrene and perforation of the appendix, abscess formation, and general peritonitis—occur between the Friday and the Sunday, or had there been pre-existing disease, and only the more urgent of the phenomena, viz., the general peritonitis, set in during these two days? It is, of course, impossible to answer this, in view of the fact that appendix disease may occasionally exist with few or no symptoms. At the same time the history, and the absence of evidence of former peritonitis in the form of adhesions, etc., are rather in favour of the acute origin of the condition. The second point is as to the cause: sudden and extreme torsion of the appendix, in connexion with the severe strain when working the heavy lawn-mower, might be accountable for it. There was no evidence of any concretion in this case.

CASE IV.—*Chronic Recurring Appendicitis.*

C. L., æt. 23, was first seen by me in December 1890, in consultation with my friend Dr M'Ewan of Prestonpans, for acute appendicitis, which was well marked. The attack passed off, but a hard swelling remained in the right iliac fossa, and from time to time fresh acute symptoms arose during many months, and he must have had about a dozen such recurrences. In October 1891, as the patient's health was being slowly undermined, it was resolved, in consultation with Mr Chiene, that an operation for the removal of the appendix should be resorted to as the only chance of arresting this; and accordingly opportunity was taken of the absence of an attack to perform the operation, which was done on 20th October 1891. Although considerable difficulty was encountered with adhesions, the appendix was reached. It was found enlarged and adherent to the abdominal wall. It was detached from the cæcum, and as far as possible from its adhesions, and removed. A large fæcal concretion was found in its canal. There was no suppuration. The patient made a good recovery, and is now quite well.

CASE V.—*A Case of the Same.*

P. H., æt. 20, had been treated in the Infirmary for recurring attacks of appendicitis, of which there had been apparently seven or eight, and a hard swelling persisted. The patient, who was unable to work in consequence, begged that an operation should be performed.

Mr Duncan, who had repeatedly seen the case, regarded it as a proper one for interference, and the patient was removed to his wards. The operation, performed early in December, proved to be one of extreme difficulty, the adhesions being almost insurmountable, and requiring prolonged and careful work in separation before the appendix, which lay at the most extreme posterior and lower part of the cæcum, could be reached. It was ultimately secured and removed. It was found enlarged, and contained a large concretion. The patient succumbed in two days, never having fully rallied from the operation.

Any lengthened statement upon the general, not to say the differential diagnosis of appendicitis is impossible in a communication of this nature. Yet a few points out of many which have arisen to myself in encountering cases of this malady may be briefly referred to.

The milder and more common cases do not, as a rule, present any serious difficulty in diagnosis, since the age of the patient, the clinical history, the tumour in the right iliac fossa, and its course and disappearance, leave little room for doubt. It is otherwise, however, when, from the symptoms, the question is raised whether or not an abscess exists, and the need arises for surgical interference; so likewise in the very acute cases, such as W.'s, above described. As regards the point as to the diagnosis of the presence of pus, it must be confessed that we have no certain indication. But some considerations are helpful. If, for instance, after the cessation of the acute symptoms in an ordinary case, and the recognition of the usual tumour, there is a revival of the local pain, an increase of temperature, especially with rigor, and a quickening of pulse, careful manipulation, both *per rectum* and externally, may prove the presence of fluctuation, but often enough the result is negative; and all authorities admit the possibility of the presence of pus, with few or no symptoms.

Again, diagnostic difficulties are presented by such a case as W.'s, where, with the evidence of previous perfect health, alarming symptoms such as he presented suddenly arise. If, as is often the case, constipation is a prominent accompaniment, one might readily think of sudden internal strangulation or obstruction of some sort. And even where the symptoms seem to indicate a perforative peritonitis, it by no means follows, even in the case of young male subjects, that it is intestinal, and not gastric. I have seen such symptoms occur from a perforating gastric ulcer in a young man of 21. At the same time, there is one general rule I have deduced from my observations on the disease now under consideration which I would venture to commend especially to my younger brethren, and it is this,—that when in a young person, especially of the male sex, symptoms of acute peritonitis arise, one of the most prominent considerations should be the probability of its being due to an appendicitis. In the case of children the diagnosis has sometimes to be made between appendix disease and tubercular peritonitis, and it is by no means always easy; for in the latter, as I have frequently found, the symptoms are sometimes developed with singular suddenness, and physical examination of the abdomen may show a state of things hardly distinguishable from that met with in appendicitis.

Still another diagnostic point worthy of notice in relation to the relapsing form of appendicitis is the recognition of the enlarged and inflamed body, which many writers affirm they can make out by palpation. I do not doubt that in a considerable number of instances, and by very experienced hands, this may be done, but it would be a mistake to suppose that the elongated swelling in such instances is always the appendix. In the case of P. H., Mr Duncan and I made many external examinations of the patient's abdomen, and thought we had identified the appendix lying downwards towards the pelvis. At the operation, however, this proved to be not the appendix at all, but a dense, almost impermeable mass of old adhesions, and the appendix lay embedded far off, beyond the possibility of being felt externally.

In dealing with any form of appendicitis a rectal examination ought to be made, and will be found in many otherwise doubtful cases to assist in establishing a diagnosis. Search for pus by exploratory puncture is generally and properly condemned.

Treatment can only be referred to in a very general way from the physician's point of view. Prophylaxis in the form of diet, regulation of the bowels, etc., is highly necessary in any case where there may previously have been symptoms of the disease. The most important questions relate to surgical treatment, which, however, has to enter largely into the physician's consideration in dealing with certain forms of this malady, happily the rarer forms. For it is ever to be remembered that the great majority of cases of appendicitis recover with the very simple treatment of rest, opium, light diet, etc.,—being, as they presumably are, cases of moderate inflammation of the appendix with localized peritonitis.

The difficult problems of treatment arise in connexion with cases which there may be reason to fear are taking an unfavourable course, and obviously much must depend upon careful observation and appreciation of symptoms and accurate diagnosis. It is just here the difficulty arises, for it is certain that there may sometimes be an absence of relation between the symptoms and the actual lesions, and accordingly the danger exists of the suggestion of procedure, which may prove too precipitate action in one case, and again may be fatal delay in another.

Attempts have been made to lay down rules as to interference in cases where suppuration is diagnosed, as to the time which should elapse before anything is done, the manner of operation, and so forth, but no such rules could be absolutely relied on for general application. My own experience has taught me that each case has features attaching to it which must receive consideration apart from any general rule, and that the state of the patient largely enters into the procedure to be pursued. I feel sure that those who have had most to do with such cases will be the least rash to resort to measures which involve serious risk to life, and will endeavour to discriminate the cases which should be left alone from those which should be promptly dealt with. It is, no doubt, true that where abscess formation has occurred spontaneous recovery may take place,—some say by the pus being absorbed, but certainly much oftener by its being discharged externally or into a viscus. Yet few would trust to a favourable chance of this kind, and the rule is as safe as any rule of the kind can be, that where pus exists in the neighbourhood of the appendix it should be evacuated as soon as possible. Danger is present while it remains ; but the difficulty, as already stated, is to be sure that it is there. Nevertheless the risk should be undertaken when a careful consideration of all the evidence results in a strong suspicion that pus is present. An incision over the tumour and into the peritoneum is the procedure most likely to lead straightest to the seat of the collection, in or near which the diseased appendix may be found and dealt with.

Those cases where, with alarmingly acute symptoms, evidence of general peritonitis exists demand prompt surgical treatment as the only possible resort; and the method adopted by Mr Duncan in the case already referred to (of W.) seems to me the wisest plan to follow. Mr Duncan himself will deal with this surgical subject to better purpose than I can, but I may be permitted to express the view that that case is one from which surgeons may derive encouragement to interfere even in almost desperate conditions.

In the relapsing form of appendicitis, after palliative measures have failed to remove the swelling, the question of operative treatment arises. In the two cases alluded to in this paper such treatment was undertaken in consequence of the patients being completely disabled and their health steadily undermined by the recurring attacks. This is an important factor in connexion with operative interference. I would venture, however, to express a doubt whether, when such an operation is undertaken, and there are found to be, as in one of the two cases, adhesions of a formidable character requiring lengthened manipulation, and it may be laceration of the peritoneum, it might not, after all, be advisable to desist. This, again, is a surgical point, and I have to apologise for trenching on this department at all, my only excuse being an intense interest in the surgery which the physician calls into request as his therapeutic agent.

But, indeed, in this whole subject of appendix disease the surgeon and the physician occupy common ground (although different areas of it). It is much to be desired that the surgeon should, when sent for, avoid the merely surgical attitude, and place himself in line with the physician in deliberating upon the grave problems in the given case, remembering, as Talamon puts it, that "it is less to his bistoury than to his judgment that we make appeal." But, while this is true, it is equally important that the physician should let his mind enter into the surgeon's sphere, and endeavour to make himself acquainted with the nature, extent, and possible difficulties of operative procedure in this important region of the body. It is only thus that he can justifiably take upon himself the responsibility—for it often rests with him as regards the final decision—of advising a measure of treatment fraught with momentous interest to a human life.

II.—THE OPERATION FOR INFLAMMATION OF THE APPENDIX VERMIFORMIS.

By JOHN DUNCAN, M.A., M.D., LL.D., F.R.C.S. Ed., Surgeon to the Royal Infirmary, Edinburgh.

(*Read before the Medico-Chirurgical Society of Edinburgh*, 3*rd May* 1893.)

THERE can be no question that the experience of recent years has established the operation for inflammation of the appendix vermiformis as a valuable addition to surgical resources. But there are two points on which the last word will not have been said for many years to come, viz., the time to operate and the mode of operating.

Under the first head we are met by difficulties, because the diagnosis is uncertain between this disease in its acute form and various other abdominal affections. By the accumulation of experience we are gradually gaining definition, but a certain number of cases remain in which the chief features are the symptoms of obstruction of the bowels, accompanied or followed by peritonitis, and in which the signs of localization are deficient. Fortunately, in most of them the determination to operate is arrived at through similar considerations, and usually only the mode of operating is influenced by the want of accuracy.

But even when we can attain a fair assurance that we have to deal with a case of typhlitis—and I include under the title inflammation of its appendix—there are serious difficulties in fixing the proper moment to interfere.

We meet with three distinct varieties of the disease, which we may call the diffuse, the localized, and the relapsing.

In the first, with or after more or less indication of origin in the region of the cæcum, there is speedily developed a general peritonitis, which peritonitis may remain adhesive and may ultimately subside, or may pass immediately or quickly into the purulent condition, and then, if left to itself, it inevitably ends in death. The general principles by which one should be guided are sufficiently plain. The moment it is ascertained that the peritonitis is purulent, laparotomy must be performed; and again a patient ought not to be allowed to succumb to the disease without an operative attempt to relieve him of the origin of his danger. I do not intend to discuss the mode of arriving practically at a knowledge of these points. Every one must admit that they involve a most anxious consideration of the most minute details in each individual case, and that we are only beginning to arrive at a due recognition of the value of symptoms. May I merely, in passing, draw attention to the relation of pulse to temperature as valuable, and to doughiness on palpation and on rectal examination as worthy of consideration.

In the second, the localized variety, the guide to operation is the presence of pus. Again the principle is easy, but the practice by no means so simple. Still, the ordinary rules which enable you to detect deep-seated pus in any part of the body are entirely applicable, and it is better to err on the side of operating too soon than to run the risk of the abscess opening into a viscus or the general cavity of the peritoneum.

In the third, or relapsing variety, no hard and fast rule can be laid down. In such cases the patient probably runs comparatively little risk in any individual attack. I have at present under observation several such patients. One, for example, had a tolerably severe attack four years ago, with which he was ill for several weeks; since then, provoked in almost every instance by inattention to the bowels, by exposure, or over-fatigue, twelve or thirteen seizures have laid him up, but each have yielded readily to rest and medicaments. The others present every degree of frequency and severity, up to one in which the attacks are so severe, and follow each other so closely, that the patient for a year has been practically obliged to abandon active life.

In such varieties of the disease one must be guided largely by the circumstances of the patient as well as the severity of the case,—the ability to put in practice the life of care which is essential to his ultimate cure, as well as the danger which the nature and frequency of his attacks may involve. Plainly, if the determination to operate be arrived at, it is well to do so in an interval of quiet, when the inflammatory action is least pronounced.

Each of these varieties of the disease involve also certain considerations as to the mode of operating.

I am inclined to think that in all cases of the acute variety in which the diagnosis may contain an element of doubt, as well as in all cases where purulent peritonitis is fairly assured, the proper course is to incise, in the first place, in the middle line. This enables you to make an exhaustive search for the origin of the trouble, and allows a more thorough cleansing and drainage of the peritoneum. If it be appendicitis, or anything else requiring a second incision, it is a distinct advantage to have a tube in two places, and I feel convinced that without it the patient exhibited to-night could not have recovered. It was only by the through and through washings at short intervals that septic absorption was prevented from leading to a fatal issue.

Having discovered that the purulent peritonitis is due, as it usually is, to appendicitis, and having in consequence made the usual lateral incision over the appendix, an endeavour must be made to remove the source of the inflammation. My experience is that in these cases (a first attack of the acute and purulent variety) it is usually easy to do so. The adhesions are easily separated, the appendix easily recognised, often gangrenous, often with a visible ulcerated opening, often with a concretion in it. A ligature is applied at the base, and the diseased part removed. There can be no objection to stitching peritoneum over the cleansed stump, but in acute cases this is often impossible, and probably is unnecessary in any. I confess that neither in this nor in the other varieties of appendicitis have I been able to assure myself of the true pathology of the disease. Mr Treves, no mean authority, speaks as if it were almost invariably a matter of kinking, bending, or twisting. There can be no doubt that sometimes it is, but in the majority I have not been able to make it out. In one case the appendix was very short and thick, almost completely occupied by a concretion, its lumen apparently obliterated at the neck, which was hard and somewhat contracted. There was no appearance of twist or bend, and the impression received was that the presence of the concretion was the cause of inflammatory action, and that the swelling resulted in gangrene by pressure at the rigid neck. In another, a relapsing case, the appendix, as long and large as the forefinger, firmly bound down to the posterior wall of the abdomen, stretched away from the cæcum with the gentlest of curves, and no sign of strangulation or twist. In several I have seen a bend possibly acute enough to do harm; scarcely in any a twist sufficient to produce injurious effect. In the majority a concretion has been found.

It must not be supposed that the operation in acute appendicitis is always easy. In some there is the history of a previous attack; and in others, chiefly children, although there be no such history, the operation affords evidence of old inflammation. In a young child whom I saw lately with Dr Affleck and Dr Murdoch Brown, the previous personal and family history rather inclined me to view it as an obstruction produced by old tubercular peritonitis. On operating by incision in the middle line, the adhesions were such as to render further procedure hopeless. The slight amount of fluid in the peritoneum had a distinctly fæcal odour, so I inserted drainage-tubes and washed out the abdomen. The child gradually sank, and on post-mortem examination Dr Alexis Thomson found, as you have seen, buried in coils of matted bowel, a perforated appendix. The case induces me to review my diagnosis in a very similar condition which I met with in operating for supposed obstruction of the bowels from tubercular peritonitis in a patient of Dr Graham Weir's. We found the matting such as entirely to preclude any search for the cause; but, as Dr Hodsdon and I both thought that there was a fæcal odour, a glass tube was passed as far as possible towards the pelvis. In two days fæces passed by the tube, and continued to do so for three weeks. A week after the operation fæces began to pass also by the normal passage, and the wound ultimately soundly closed. Now, several years afterwards, the boy is perfectly well, but for many months he had repeated attacks of pain and obstinate constipation. I believe that this was, like the other, an example of perforated appendix, although fortunately this opinion is not verified by inspection.

In operating in that class of case in which the inflammatory action is localized in the region of the cæcum, the situation of the incision will be determined by the indications of purulent collection, always with a tendency towards the point opposite the anterior superior spine, which experience has shown is most convenient for reaching the appendix. Not that any very strenuous exertion should be made to reach and remove that structure. There is risk by too great energy of opening into the general peritoneal cavity, but if amidst the pus the appendix can be found, it is well to ligature and cut it off. Undoubtedly some of these abscesses are not connected with the appendix, but with tubercular, malignant, or other disease of the cæcum, or even the colon. In the case of a medical man on whom I operated, and who ultimately sank from exhaustion, the mæsocolon was found dissected by pus from the cæcum to half-way along the transverse colon, but there was no trace of disease in the appendix. I have seen with Dr Affleck a most remarkable cure in an octogenarian lady (88), in whom I opened a fæcal abscess pointing above the central part of the crest of the ilium, and without notable tumour in the iliac fossa. The fæcal fistula which resulted has entirely healed and broken out again on more than one occasion, but of late without fæcal discharge, and at this moment is absolutely healed. Its exact etiology is obscure.

These localized abscesses, whether peritoneal and localized by matted coils of intestine, being, then, generally connected with the appendix or situated in the cellular tissue, and then truly a perityphlitis, usually may be brought by good drainage to a successful issue.

I have already referred to the conditions which justify operation in relapsing appendicitis, and to the propriety of choosing a period of quiescence for the operation. Very frequently the position of the appendix may then be very distinctly determined by feeling a finger-like process running downwards and inwards towards the pelvis. In some the operation is quickly and easily performed;

in others no more difficult operation can be undertaken. As an example of the latter, I may refer to one of the cases in which I was associated with Dr Affleck, and I do so the more readily because, as is unusual in such, it terminated fatally. A distinct finger-like process could be felt stretching towards the pelvis, but upon incising in the usual place this was found to be a thickened and matted coil of bowel. There had been many inflammatory attacks, and the adhesions were so old and tough, and the complications of bowel so intricate, that their dissection and separation occupied nearly two hours before the diseased appendix was reached. Even then it was a work of great difficulty to separate it from its surroundings. I found assistance in the discovery of the appendix after the cæcum had been detected (in itself a work of great difficulty) by following down the longitudinal broad band. I also found it easier to dissect out the appendix by working from its base. I do not know, looking back on this case, whether or not I should have proceeded with the operation on discovering the condition of affairs. The shock was tremendous, and the patient sank on the second day, there being slight indications of peritonitis. I suspect that during the prolonged operation some error was committed, and that the peritonitis may have been septic. The operation was performed in the crowded general theatre. I am not in the habit of fearing prolonged exposure, even in such an atmosphere. Septic infection rarely comes from the air; but in this case there was necessarily much bruising of tissue, and its germicide value was necessarily greatly lowered. I have the feeling that in private even such a case would have been successful.

III.—ON ABORTION.

By James Oliver, M.D., F.R.S. (Edin.), F.L.S., Physician to the Hospital for Women, London.

Before attempting to discuss the multifarious causes which may lead to and determine the premature expulsion of an impregnated ovum from its recognised *habitat*, the uterus, it is absolutely requisite that we should be familiar with those evolutionary changes which a healthy ovum placed under the most advantageous circumstances will display both before and after fecundation. Unless we possess this knowledge it is impossible for us to appreciate aright the manner in which some of the causes of abortion exert their influence. The need for this knowledge is greatly enhanced by the fact that there is hardly an action or a disease which has not been assigned as a cause of this untoward event.

Whilst investigating this abstruse phenomenon we must never lose sight of the fact that we are dealing with an organic mass which is the product of two elements, one of which is derived from the male and the other from the female parent; and that this germinal mass may be expelled from the uterus before it attains maturity, in consequence, it may be, of some physico-chemical disturbance emanating either from the sperm or the germ element. From the first moment of its existence every impregnated ovum bears within itself a principle of death as well as a principle of life; but it frequently happens that an ovum which is not perfectly healthy is fecundated, and in this case the principle of decay may assert its supremacy whilst embryonic development is proceeding, and the life of the fœtus may be thereby destroyed. What is true of the ovum is also true of the spermatozoon; for in order that the process of ontogenetic differentiation may be completed, not only must the segmentation nucleus contain a certain amount of germ plasm, but its quality must be of a certain standard. If the quantity is too rapidly exhausted, or the quality is unequal to the demand made upon it, embryonic development may cease, and thereafter the immature product of conception will sooner or later be expelled from the uterus.

In the case of some of the Lepidoptera which reproduce by parthenogenesis, it is observed that all the eggs laid by an unfertilized female do not develop,—some perish. Now, if the eggs which have failed to bring forth young are examined, it is remarked that in many the process of evolution has been arrested at very different stages,—the impulse to development had, in fact, been imparted, but the power to complete it had been withheld. Revelations of this character teach us that the growth of nuclear substance which is not unlimited and uncontrolled is regulated by physico-chemical influences of an extrinsic as well as an intrinsic nature, and that although segmentation and differentation has been started, it does not follow that these operations shall be carried to completion.

It is now universally admitted that in the human female the ovary is the seat of origin of those cells which are destined to participate in the perpetuation of the race. In their early state these cells are simple. Each is composed of a transparent mass of protoplasm containing a very large nucleus and a nucleolus. To the nucleus and nucleolus respectively the terms germinal vesicle and germinal spot have been applied. From time to time much discussion has arisen regarding the order and manner in which these components of the egg make their appearance. Some believe, with Baer and Purkinje, that the germinal vesicle is the first in existence; whilst others, again, assert that this priority belongs to the germinal spot. All are agreed that the protoplasm or vitellus accumulates round the germinal vesicle, and that the vitelline membrane is produced simply by a coagulation of this material.

All germinal cells do not, as a rule, become ova; but the many subserve the few which attain this distinction. The ovum, like every other structure of the body, grows and is nourished; but it is noteworthy that the materials which feed it are chiefly derived, directly or indirectly, from those neighbouring germinal cells which are not destined to become ova. In some cases, as in sepia, these abortive cells are actually devoured by the ovum; but, generally speaking, they form a special layer around the egg, and this structure is nourished by these so-called follicle cells, which elaborate material from the nutrient fluid. At first the protoplasmic body of the ovum is small compared with the nucleus or germinal vesicle; gradually, however, it increases in size as the ovum becomes more and more mature.

When the egg has completed its development in the ovary it is set free by a mechanism which varies according to the species that one observes. In birds, reptiles, fishes, and the vertebrates generally, the egg, by virtue of its own size, bursts its confining capsule and escapes from the Graafian vesicle; whereas in the mammals the ovum by itself never exerts a sufficient amount of pressure to produce this result, but its escape is effected through the agency of an exudation of serous or bloody fluid into the Graafian vesicle. It necessarily follows that if this secretion does not take place, or is insufficient in amount, the ovum cannot escape, and sterility results. In the case of the human female, as well as other animals, eggs exist prior to conception, and they are often expelled from the body even without being fecundated. It is therefore evident that, independently of any influence on the part of the male, an ovum when it reaches maturity may escape naturally from the ovary. The secretion, however, which causes the Graafian vesicle to rupture in a mammal may either accumulate gradually as the ovum ripens, or it may be poured out more or less suddenly during sexual intercourse.

We are not as yet cognisant of the time at which the ovum most probably escapes naturally from the human ovary. Considering, however, that rupture of the Graafian vesicle results from augmented tension, and that the greatest amount of tension in the genital organs exists just before an expected "period," I am of opinion that the egg makes its escape naturally from the ovary at or about the time when the menstrual discharge makes its appearance. The breach on the surface of the ovary is rapidly repaired. In consequence, however, of the cicatrices which are thus produced the ovary may eventually become so corrugated that the ova can no longer escape. For this reason, toward the end of the child-bearing epoch menstruation may continue to recur regularly for months, or even years, after the cessation of the process of oviposition.

The egg when extruded from the ovary is enveloped by certain structures which are called primary membranes. In reality two primary membranes are recognisable. One, the vitelline, is formed by the protoplasm which constitutes the body of the ovum; whilst the other, the chorion, is developed from the follicle cells. In the vertebrata two vitelline membranes are found. For one the term "vitelline membrane" is retained; whilst to the other, which is perforated, the term "zona radiata" is applied.

It is not yet definitely settled what changes may take place in an ovum which has not been fecundated. In the case of an unfertilized ovum it is alleged that the germinal vesicle and germinal spot may both disappear; whilst other authorities assert that these structures only disappear if the egg has been fecundated. A third group of observers affirm that the vesicle continues after impregnation.

According to Fol the ripe ovum when detached from the ovary possesses a granular vitellus and is enveloped by a mucilaginous coat—the zona radiata. The germinal vesicle then occupies an eccentric position and contains a germinal spot. As a normal result of growth, and independently of fecundation, the following changes may now take place:—A spindle is formed which approaches a small prominence on the surface of the egg; out of this spindle is formed the so-called polar bodies or cells, whilst from the portion of the spindle which remains in the egg are found two or three clear vesicles. These vesicles rapidly unite and form a single nucleus. This nucleus, which is evidently a product of the original germinal vesicle, is called the female pronucleus. The egg, it would appear, is not in a fit condition to receive and respond to the influence of the sperm element until these changes have taken place,—until, in fact, the female pronucleus has been evolved. If, however, a spermatozoon approaches an egg in which these changes have occurred, it is remarked that the protoplasm of the egg begins forthwith to bulge at a spot pointing to the nearest spermatozoon. This prominence, or cone of attraction, is only developed when the sperm and the germ elements have an affinity for each other; but once it is formed it continues to grow until it coalesces with its partner. One spermatozoon only, it would appear, is requisite for a healthy evolution of the process of nuclear segmentation. When two or more spermatozoon fecundate an ovum, a monster or some other pathological product of conception is likely to be developed. Once contact is established between a spermatozoon and the cone of attraction, the ovum is incapable of being influenced by other spermatozoon, even although these be in close apposition with it. Immediately the two elements coalesce the body of the spermatozoon commingles with the substance of the cone, and nuclear division rapidly ensues. Cleavage takes place and two spheres are formed, one of which is larger than the other. The larger is the epiblast and the smaller the hypoblast. The hypoblastic sphere, again dividing, produces the mesoblast. The mesoblast splits into two layers, a splanchnic and a somatic; and it is from a fold of the somatic mesoblast and the epiblast that the amnion is developed.

When the impregnated ovum arrives in the uterus it becomes attached to the walls of this organ by peculiar processes or villi which grow out from the ovum and fit into folds of the uterine epithelium. These villi, which continue non-vascular for nearly three weeks after their formation, nourish the embryo by absorbing material from the uterine tissue. At this early period fluid is even found in the amnion. Towards the end of the third week after conception the allantois, rapidly developing, thrusts its blood-vessels into the chorionic villi. Until about the sixth or eighth week—*i.e.*, for three weeks—the ovum is practically covered by placenta. Towards the end of the second month those chorionic villi which are not destined to participate in the formation of the true placenta atrophy and finally disappear, leaving under ordinary circumstances no trace of their existence.

Having thus far cursorily dealt with these early evolutionary changes, a thorough knowledge of which is so essential for our guidance in discussing the phenomenon of abortion, we shall now turn our attention to and study those physico-chemical disturbances which may lead to and determine the expulsion of an immature product of conception from the body.

A woman, it must be borne in mind, does not become pregnant because she has ceased to menstruate, but she ceases to menstruate because she has become pregnant. In spite of this truism, the idea of the probable existence of pregnancy is not generally entertained until a menstrual period is missed. During the early days of pregnancy, however, it is quite possible that a woman, ignorant even of the fact that she has conceived, may miscarry without her knowledge. The process of evolution may be arrested at any stage; for, as I have already remarked, although the impulse to development is given, the power to complete it may be withheld. Early products of conception need not, however, be confounded with those casts of the uterus or shreds of membrane which are occasionally extruded by virgins and others, and which constitute the so-called membranous dysmenorrhœa. These croupous exudations, whose minute structure is totally different to that of a blighted ovum, are never a direct result of insemination, although in some cases the tendency to their formation appears to be greatly increased by indulgence in sexual intercourse.

When abortion takes place it is often difficult, and sometimes even impossible, for us to determine the actual cause of this disaster; and yet it is evident that the physico-chemical disturbance inducing it must belong either to the sperm or the germ element, or be directly attributable to the mother herself. Once the spermatozoon has left the body of the male it can no longer be directly influenced by the vicissitudes to which the body of its parent may thereafter chance to be exposed. The woman, on the other hand, has not only to contribute her share in the formation of a segmentation nucleus, but she must harbour and nourish in her body for a more or less fixed period of time the impregnated ovum. During this sojourn the product of conception is liable to be affected by conditions which may exert an influence upon the body of the mother. The nucleoplasm may be sufficiently endowed to complete its evolutionary changes, but these may be arrested at any moment in consequence of some physico-chemical disturbance which either did exist before or may have originated after impregnation, and for which the mother is solely responsible.

When men or women are exposed for a greater or less length of time to the influence of certain toxic agents the vigour of the reproductive elements begotten by these individuals is apt to be impaired. For this reason a fecundated ovum generated or impregnated by an individual whose constitution has been acted upon by lead, bi-sulphide of carbon, or other toxics, is exceedingly liable to be aborted. If the husband or the wife is employed at a lead factory, or is exposed to the fumes of bi-sulphide of carbon at an india-rubber work, abortion, it will be remarked, is a common sequel of pregnancy. So potent, in fact, is the influence of lead in the system in the production of this untoward event, that nearly 50 per cent. of the women who have for a length of time worked with lead fail, when they become pregnant, to carry the product of conception beyond the third or fourth month. Still more decided, even, is the deleterious influence of bi-sulphide of carbon on the organs of generation, for not only does intoxication by this compound predispose to abortion, but it tends to abolish the sexual desire and induce a state of impotence. The women, it is alleged, who bottle quinine, and who thus respire the dust of this powder, lose the aptitude for carrying the impregnated ovum to full time. I have been unable to verify the truth of this statement, although I am convinced that quinine given for a long period in large doses disturbs temporarily the organs of generation in a variety of ways. It is generally stated that syphilis is the most common cause of abortion. My opinion is that the influence of this disease is very much overrated, and I feel assured that if it did not so exclusively engage the attention of observers, the treatment of abortion would be attended with better results.

The impulse which urges the nucleoplasm to undergo segmentation and to finally produce an independent being is intimately bound up in the material itself. From the first moment of its existence the germ plasm carries with it the promise and the potency of the future. It is therefore evident that if the vitality of the segmentation nucleus is impaired either through the agency of the sperm or the germ element, embryonic development will cease as soon as the power of transformation is exhausted. The conditions, obscure though they undoubtedly are, which bring about this result are necessarily causes of abortion, for the uterus will not, as a rule, tolerate for long the presence of a dead ovum in its cavity.

Whatever brings about the death of the ovum is necessarily a cause of abortion. It sometimes happens, however, that it is impossible to say whether the pathological change or changes which one detects in an aborted product of conception may be a cause or a correlative of intra-uterine death. In the case of hydatid mole, for example, it is still an open question whether the change which takes place in the chorionic villi precedes and determines the death of the ovum or is a concomitant of arrested embryonic development. Before discussing the many questions of interest suggested by this variety of abortion, the record of a fairly typical case which recently came under my observation may be worthy of attention. A woman, aged 25, who had been married seven years, was sent to me, at the Hospital for Women, by the late Dr Townsend on July 10th, 1892. She had borne five children, but had had no miscarriages. The last child was twenty-eight months old, and it had been suckled for sixteen months. Four weeks after weaning the menstrual discharge reappeared, and recurred regularly thereafter for five months. After this there was complete amenorrhœa for three months. When, however, the patient considered herself three months advanced in pregnancy a hæmorrhagic discharge made its appearance, and this discharge continued to flow more or less freely until July 11th,—*i.e.*, for eleven weeks,—when a hydatid mole was expelled from the uterus. On July 10th, the day before this patient aborted, the summit of the uterus was on a level with the umbilicus. The consistence and configuration of the abdominal swelling was similar to that of an ordinary pregnancy. On palpation the tumour was felt contracting and relaxing. No uterine souffle nor fœtal heart could be heard. The breasts were not enlarged, neither did they display the characteristics of pregnancy. The cervix was soft and the os closed. There was no evidence of constitutional disturbance other than what one would have expected simply as a result of eleven weeks' continuous hæmorrhage. The mole was carried for six months, and the size of the uterus was similar to that of a normal pregnancy of like duration. From the cases I have seen, I am convinced that unless the product of conception is carried beyond the fifth month it is impossible to differentiate a case of hydatid mole from one of ordinary pregnancy, except when pieces of the pathological product are expelled from the uterus or are felt hanging through the os. After the fifth month the absence of the uterine souffle and of the fœtal heart, together with the negative signs of the breasts, are of the utmost importance from a diagnostic point of view. It seldom happens, however, that a hydatid mole is carried longer than six months.

(*To be continued.*)

IV.—SIMPLE GROWTHS OF THE UTERINE MUCOSA.

By F. W. N. Haultain, M.D., F.R.C.P. Ed., Lecturer on Midwifery and Diseases of Women, School of Medicine, Edinburgh; Gynæcologist, Royal Public Dispensary, Edinburgh, etc.

(*Read before the Obstetrical Society of Edinburgh*, 8*th March* 1893.)

The so-called mucous polypi of the uterus, though known to be the frequent source of marked clinical symptoms, do not seem to have had bestowed upon them the same amount of attention with regard to their structure and mode of growth which has been given to other uterine neoplasms.

Why this should be it is difficult to conjecture; for certainly their frequency, and the severity of the symptoms they give rise to, are sufficient to warrant their closer investigation.

Perhaps it is from their usual small size and the comparative ease with which they are, as a rule, removed, that text-book writers dismiss their consideration in so brief and superficial a manner. In case, therefore, this assumed reason be correct, it is my intention, from a few clinical examples, to show that such is an erroneous idea, as from their occasional large size, severe clinical symptoms, and difficulty of removal and eradication, they deserve fuller and closer description.

Case I.—Patient, aged 32, came under my notice in Oct. 1886, complaining of intense weakness, which she thought was due to constant leucorrhœal discharge, which had lasted nine months. Menstruation regular in amount and recurrence.

On examination the anterior cervical lip was found to have attached to it a bilobed, extremely soft and partially pedunculated red growth, resembling a small tomato. This was removed, and the symptoms ceased. The removal by scissors was attended with considerable difficulty, on account of the friability and vascularity of the tumour, the hæmorrhage requiring vaginal plugging for its arrest.

On examining the growth after removal, its original shape and structure was impossible to define, as from its extreme softness it had been much torn, and was represented merely by bits of broken pulpy tissue. These were sent to Dr Barrett for examination, and were found to be chiefly composed of glandular tissue, lined with columnar ciliated epithelium, and supported, as seen under Microscope 1, by but scanty connective tissue (Fig. 1).

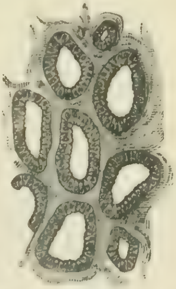


Fig. 1. Simple adenoma of cervix uteri. Case I.

In six weeks patient returned with her old symptoms, and a similar growth, about the size of a bean, was found growing from the same site as before. This I removed with the thermo-cautery, and kept the patient thoroughly under observation for six months in case of further recurrence, but during this time there was none.

In October 1889 (three years later) she again returned complaining as before, and the growth was again found growing from the same situation. So I now amputated the anterior cervical lip along with the tumour.

The patient is now, I am pleased to say, in excellent health, and no return of the disease is evident. Since the last operation she has been delivered of a healthy son.

CASE II.—Mrs P., aged 70; menopause at 45; in May 1892 complained of severe bleeding from the vagina, and on examination the os uteri was found dilated, and projecting through it was a large irregular mass of a dark red colour. The history, as obtained from Dr Jeffrey, Ayton, was that eighteen months previously the patient had complained of vaginal hæmorrhage, and he found her suffering from a similar tumour of large size, which he removed with difficulty; it weighed 21 oz. Since that time he had removed from her three other growths similar in character, but smaller in size, the last weighing 12 oz. He therefore sent her into hospital to see if nothing could be done to prevent further recurrence.

After removal of the polypus, which weighed 8 oz., the uterine cavity was examined. It was roomy, and measured 5 inches, and situated within it could be felt two rough protuberances—the one on the anterior wall of the uterine body, the other on the posterior wall of the uterus about an inch from the os externum—evidently commencing growths of a similar character.

The polypus was pear-shaped, its external surface irregular, and opening here and there over it were the mouths of canals which evidently invaded its substance. On section, the substance of the tumour varied considerably in consistence, being hardish and fibrous-like in the centre, and gradually becoming softer towards its periphery, while coursing through it canalicular spaces could be seen cut longitudinal and transversely, communicating with the exterior by the openings already described on the surface (Fig. 2).

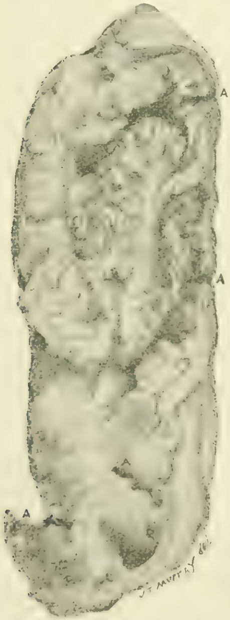


FIG. 2. Section through polypus from Case II., showing channelled character (A, canaliculated spaces opening on surface).

By the nitric acid test of Dr Stiles the structure could be seen by the naked eye to be entirely connective tissue in the centre, while the periphery and lining of the canalicular spaces were evidently cellular.

The microscope corroborated this excellent naked-eye test, and showed the substance of the growth to be made up almost entirely of connective tissue, while the surface and lining of the canals was formed by a single layer of columnar epithelium.

The connective tissue in the centre of the growth was well-formed fibrous tissue undergoing hyaline change, while towards the periphery the tissue became more embryonic and cellular.

Considering the benign character of the growths, and their apparently but slight effect on the patient's health, it was decided not to perform any radical operation, so the uterine cavity was merely swabbed out with iodine. Since that time, I am informed by her doctor, the patient has spontaneously passed five more polypoidal-looking masses, varying in size from a hen's egg to the closed fist. With each a slight hæmorrhage and pain occurs, but in the interval the patient is well and enjoys good health.

The last one, passed ten days ago (kindly forwarded to me by Dr Jeffrey of Ayton), I have the pleasure of showing.

Its surface is partly smooth and partly rough, the rough portion looking as if the growth had been torn across. The polypus as a whole, where fresh, was softish, about the size and shape of an ordinary Cambridge sausage, and weighed 8 oz.

On close examination by the nitric acid test and the microscope, it is seen to be entirely made up of blood-clot, and is thus an example of a fibrinous polypus. The microscope also shows the fibrinous matrix to be infiltrated by leucocytes and young connective tissue corpuscles, while coursing all through may be seen young bloodvessels, with coats formed of a single layer of endothelium,[1]—facts which conclusively show an attempt has been made at organization of the clot, which must therefore have had intimate and organic connexion with the uterine wall, and thus materially differs from a simple retention clot.

CASE III.—A patient, aged 32, who had suffered from menorrhagia and leucorrhœa for seven months, on examination showed a pedunculated growth, somewhat larger than a chestnut, growing from within the cervix and projecting into the vagina. Its surface was rough and irregular, and had a cauliflower feel, but it was freely movable, did not bleed upon examination, and the vaginal discharge was not fœtid.

On grasping with volsella it bled profusely, and I removed it with the écraseur.

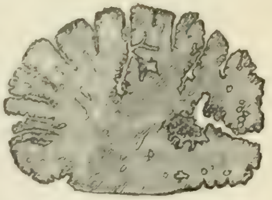


FIG. 3. Section of lobule from papillary polypus. Case III. (From Nature.)

The growth, on examination, closely resembled the appearance of a cauliflower, its rough irregular surface being broken up into a number of cotyledons (Fig. 3).

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[1] Specimen demonstrated under microscope.

On microscopic examination it proved to be a connective tissue outgrowth of a papillary type, the individual papillæ being covered by a layer of low columnar epithelium. After removal symptoms ceased, and there has as yet been no return (two years).

CASE IV.—A patient, aged 30, who complained of weakness, the result of menorrhagia, metrorrhagia, and profuse leucorrhœa of some months' standing.

On examination a small pencil-like growth was felt projecting through the os externum and attached to the uterine mucosa, fully an inch up the canal. It was smooth and of firmish consistence.

After removal the microscope showed it to consist of well-formed fibrous tissue, through which coursed numerous glands lined by cylindrical ciliated epithelium.

The surface was covered by numerous layers of stratified squamous cells. On the surface the glands freely opened, the transition from the cylindrical cells lining the gland to the squamous epithelial covering of the growth being quite abrupt.

There has been no return of the growth (eighteen months).

In attempting to classify the growths obtained from the above-mentioned cases, that from Case I. appears to be a well-marked example of a true adenoma, somewhat resembling a type of cervical growth already described by Underhill before this Society as a "Channelled Polypus," but from this it chiefly differs in the small amount of inter-glandular stroma met with.

From the microscopic appearances it must be classified as benign, its recurrence resulting from an insufficient eradication of its base.

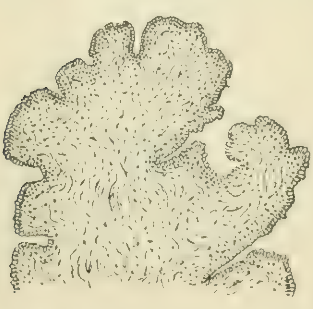

FIG. 4. Microscopical appearances of fibrous papillary polypus, showing the highly cellular periphery with well-formed connective tissue centre. × 40.

In Case III. the seat of active growth is undoubtedly confined to the fibrous tissue of the mucosa, which, growing outwards in a papillary manner, receives a covering of epithelial cells.

From the primary outgrowth secondary offshoots arise in a similar manner, so that the rough, irregular cauliflower surface already mentioned is formed.

From this eccentric growth of the fibrous tissue processes, each covered by a layer of epithelium, the tumour on section appears at its periphery to be riddled with glands; these, on closer examination, however, may be seen to be the interstices between the fibrous tissue outgrowths, and are not glandular in nature.

That such is the evident development and growth of this somewhat rare variety of cervical tumour is well demonstrated by the microscopes I have placed before you (Fig. 4). From these it will be seen the area of active growth, as recognised by its cellular nature, is situated immediately beneath the epithelium, while as we approach the centre of the primary outgrowth the connective tissue becomes less and less cellular and more fibrous.

The type of neoplasm represented in Case II. is also essentially of a fibrous character, but seems to differ from the papillary growth just described, more in its probable origin and mode of growth than in its structure.

As already stated, this tumour, though mainly composed of connective tissue in all degrees of development, was specially characterized by the presence of canalicular spaces coursing through its substance in all directions. These spaces, lined by columnar epithelium, are evidently enlarged glands. It would thus appear as if the tumour owed its origin to an active hypertrophy of the fibrous tissue over a limited area of the uterine mucosa. The glands situated in this area, though not in themselves actively proliferating as in adenoma, remain and are enormously hypertrophied from the active increase of their surrounding stroma. As in the papillary variety, the seat of active growth would appear to be immediately beneath the epithelium, as there the tissue is more embryonic and cellular in character; but, unlike the papillary type, there seems no disposition to the secondary papillary offshoot, which gives that type of tumour its rough cauliflower-like surface.

The tumour thus described closely corresponds with fibrocystic tumours of the mamma, and which, among many other names, has been described as fibroma intra-canaliculare and cystosarcoma fibrosum. The cysts are formed by dilatation of the enclosed glands. Like these mammary tumours, they must be looked upon as benign, although in a certain percentage of cases (4 per cent.) liable to local recurrence.

A case by Rosenstein of recurrence in the mamma closely simulates Case II. in its history.

They are never associated with metastases or infiltration of the surrounding lymphatics, and it would appear, when they recur, that it is not due to a local malignancy, but to another portion of the glandular structure becoming active, as shown in my case, where, after removal of one polypus, others were felt commencing. The extremely embryonic and cellular character of the periphery of these growths might certainly lead one at first sight to classify them as sarcomata, but from these they materially differ, in that the cells do not maintain their embryonic character, but rapidly develop into mature connective tissue. This sarcomatous appearance is further enhanced by the embryonic character of the blood-vessels in the periphery. These, from the feeble supporting stroma, frequently rupture, and thus account for the hæmorrhages found here and there through the substance of the growth, and may possibly also account for the severe hæmorrhages which form so characteristic a clinical symptom of these tumours.

The fibrinous polypus derived from the same case is of great interest. These growths, though at all times rare, are specially so in the non-puerperal state,—Fraenkel and others even denying their existence independent of pregnancy. Its probable origin has in this case been the rough, irregular surface formed by the commencing polypi, which I described as felt on examination. Upon this rough surface the blood has seemingly become coagulated, and deposited layer after layer in a stalactite manner, till its pedicle has given way and it has been spontaneously expelled. In this manner it is exactly similar to the fibrinous polypi found after labour, which owe their origin to a retained portion of ovum or the roughened surface of the placental site. Naturally, after the examination of this polypus, it is impossible to say how many of the nine removed had been of like nature and how many had been fibrous, but there can be no doubt of the multiple nature of the fibrous variety, as I felt two on examination of the uterine cavity subsequent to the removal of the one I showed.

In the specimen from Case IV. it would seem we have a combination of the previously described variation, viz., glandular and fibrous, but differing markedly from both in its investment of squamous epithelium. In its simplest variety as described by Semon, as a papillary outgrowth from the vaginal aspect of the cervix, such a type of tumour is but to be expected if one considers the normal structure of its site (viz., papillæ covered by squamous epithelium); but when arising from at least ¾ths of an inch within the cervical canal, where papillæ and squamous epithelium are unknown, the structure of the tumour becomes most interesting and difficult to account for.

This covering of squamous epithelium on the cervical growths was first described by Ackermann, and has already been demonstrated to this Society by Underhill.

The stroma in this tumour does not seem to be so embryonic in its structure as in Case II., nor has it the papillary method of growths described in Case III., but it appears to have the nature of a localized hypertrophy in which glands and stroma equally participate.

There is yet another form of mucous polypus, an example of which I show,—*i.e.*, a retention glandular cyst or Nabothian follicle. These are of extremely common occurrence, and require but passing mention.

The varieties of neoplasm I have shown, though they differ considerably from one another, must be considered as essentially mucous in their origin. Their variety consists in the type of tissue which more actively proliferates. Thus in Case I. the glands seem solely concerned, in Cases II. and III. the connective tissue is alone active, while in Case IV. both glands and connective tissue participate.

These growths are thus by some authors—as Pozzi, in his latest work on Gynæcology—not only scantily treated, but looked upon as analogous to ordinary chronic endometritis, only differing in the fact that the inflammation is localized and not general. Doubtless such a classification may be convenient for descriptive purposes, but as a scientific description cannot be too strongly condemned. If adopted throughout, uterine fibromyomata accordingly must be looked upon as localized metritis, and ovarian fibromata as a type of ovaritis,—surely, to say the least of it, a confusing and absurd description. It is surely strange, then, that the papillary fibromata of the uterine mucosa should be looked upon as mere inflammatory excrescences, while similar conditions of the mamma, nose, and intestines are described as definite and independent neoplasms.

Again, growths of the cervix, such as described in Case III., are frequently spoken of as cauliflower papillomata, and are looked upon as being closely allied to cauliflower carcinoma, and even some eminent observers characterize them as initial stages of the latter. That carcinoma or epithelial proliferation may in some cases be the result of the irritation from the actively-growing connective tissue process I do not wish to deny, such cases having been cited by Wagner[1] and others, but to look upon these two varieties of neoplasm as more nearly related to each other than that of cause and effect I cannot entertain. The structures of each are as independent of one another as that of the short-stemmed pipe of the British workman is to the cancer in his lip, yet in both instances it is possible the one would not be present without the other. Yet undoubtedly benign papillomata may exist independently without tending to take on malignant action, just as safely as many a working-man smokes with impunity his short cutty without developing labial cancer.

The gross appearance of these growths is markedly cauliflower-like, but the use of this term as applied to them should be discontinued, as it is so commonly, though unnecessarily, applied to the papillary epithelioma found in this situation, with which, as has been already shown, it has not the slightest connexion, at least in so far as microscopic examination or clinical symptoms can help us.

The usual clinical features of these mucous growths are already too well known to require but passing mention. They are usually associated with hæmorrhage and leucorrhœa. The former probably has a two-fold origin,—first, from the tumour itself, as its bloodvessels are at the periphery embryonic in type, and having a scanty supporting framework, are liable to rupture; and, secondly, from the uterine mucosa generally, this being in a state of permanent congestion. The leucorrhœa is perhaps the most characteristic symptom, and is always present, sometimes in such quantities as to be almost incredible; its character varies, but is generally clear, watery, and odourless, there being little tendency to necrosis of the tumour tissue, which gives the almost characteristic odour to the papillary epitheliomata. The size of the growths is usually limited to that of a hen's egg, but, as Case II. shows, this may be much exceeded, although I may here say that I have failed to find any described case of growths approaching in size those in this case removed.

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[1] *Gebärmutter Krebs*, p. 13.

They, unlike myomata, may occur at all ages, and this feature perhaps forms the most interesting practical point in their consideration. Occurring, as they often do, late in life, many years after the menopause, they give rise to the always gravely suspicious symptom of post-climacteric hæmorrhage, and may be said to form the majority of the small minority of cases in which this symptom is not due to malignant disease.

The diagnosis of papillary fibrous growths from epithelial papillomata is apt to be uncertain; but the absence of decaying tissue giving rise to a fœtid odour, and the slight tendency to hæmorrhage on examination, should help greatly to distinguish the former.

The treatment may be summed up in one word, viz., removal. This is most conveniently performed, if the pedicle be small, by twisting and scissors, and if large by the écraseur.

As they are (unlike myomatous polypi) nourished through their pedicle, the hæmorrhage is frequently copious after its division, and it is thus well to sear the divided stump thoroughly with the thermo-cautery, by which means not only is the bleeding arrested, but recurrence of the growth averted.

From the foregoing I may, in conclusion, say, that it has been my object to bring before the Society these observations upon this somewhat little-considered subject of mucous polypi, and have tried to show—1. That though mucous in their origin these growths vary greatly in structure, there being glandular, fibro-glandular, and papillary fibrous and fibrinous varieties. 2. That they are benign, but may have a local malignancy and recur, but are essentially different from papillary epitheliomata, for which they may be mistaken by their gross appearance. 3. That they frequently are associated with the post-climacteric period, and are thus liable to simulate the signs of malignant disease at this period; and lastly, as regards treatment, it is well, after their removal, to sear the remaining stump thoroughly, to arrest the almost constant accompanying hæmorrhage, and also prevent recurrence of the growth.

From these conclusions and the specimens I have shown, I trust that I have been able to your satisfaction to demonstrate that, from their varying and interesting structure, and from their well-marked and at times severe clinical characteristics, these growths surely demand more than the trivial and altogether inadequate description so frequently bestowed upon them.

The beautiful microscopic sections of these growths I have the pleasure of showing have mostly been prepared for me by Dr Stiles in the Surgical Laboratory of the University.

V.—UTERINE ROTATION: ITS CLINICAL IMPORTANCE IN PREGNANCY AND LABOUR.

By James Haig Ferguson, M.D., F.R.C.P.E., M.R.C.S., Lecturer on Midwifery and Diseases of Women, School of Medicine; Obstetric Physician, New Town Dispensary, Edinburgh.

(*Read before the Obstetrical Society of Edinburgh on* 11*th January and* 8*th February* 1893.)

(*Continued from p.* 1122, *vol. xxxviii.*)

Féré records two cases of pregnancy and labour in hysterical women who were delivered in a state of trance. In both cases he could palpate the ovaries, which were very tender on pressure. He watched the tender spots ascend with the uterus during pregnancy, and descend with it after labour. The left ovary was the one best felt, and there was ovarian pain on pressure post-partum.

Charcot has noted that in hysterical women, although the microscope has not yet discovered any special anatomical lesion, the ovaries are the seat of a swelling which renders them more accessible to exploration.

I have myself been able repeatedly to palpate the ovaries during pregnancy, and in every case even moderate pressure elicited pain.

The palpation of the ovaries, which we have hitherto been considering, has, however, been comparatively gentle; and in many cases the ovaries were the objects for which the palpation was made, all pressure immediately being removed as soon as ovarian pain was elicited.

The uterus in the third stage of labour is, however, often subjected to a much more severe form of palpation, a palpation which is necessary either for the purpose of stimulating it to contract firmly, or for hastening the expulsion of the placenta from its cavity. In many cases this palpation, or rather compression, requires to be very energetic and prolonged; and I am of opinion that this compression, which is only intended for the uterus, includes sometimes one or both ovaries as well, and that they in consequence may be injured in the third stage of labour by forcible compression against the contracted uterus.

(1.) In the third stage of labour the ovaries, as we have seen, lie close to the fundus uteri, and so the hand grasping the fundus could easily grasp the ovaries at the same time. The conditions are different to what they were before the expulsion of the fœtus, for then the fundus is far distant from the ovaries, and firm pressure can be made upon it (as is sometimes done in *expressio fœtûs*) without fear of including the annexa.

(2.) The pressure is often pretty vigorous in the third stage.

(3.) The rotation of the uterus, causing in the majority of cases the left ovary to come forwards towards the middle line, makes the ovary more liable to be grasped.

(4.) The ovaries in the third stage are lying just at the brim of the pelvis, and the left ovary is apt to be squeezed or pinched between the bony pelvis and the hard contracted uterus if forcible pressure downwards be made in an awkward application of Credé's method.

In a previous paper I have already detailed three cases which came under my notice in practice, in which intense pain was experienced during the compression of the uterus in the third stage, followed by a further development of remarkable nervous phenomena, terminating in well-marked shock, in which I ascribed the condition to pressure on the ovaries. From that paper I quote the following paragraph:—

"I have repeatedly seen an analogy to this occur in cases of abdominal section for the removal of the ovaries and Fallopian tubes. If, as sometimes happens (especially in cases of fibroid tumour with healthy ovaries, or where diseased appendages are not easily brought to the surface), the ovaries should be somewhat roughly handled or accidentally torn, say by a pair of forceps, before the ligature has been tied, it is a matter of common observation that the patient, though fully anæsthetized, in the majority of cases becomes affected by modified shock. The pupils dilate, the face becomes deathly pallid, the extremities cold, a clammy perspiration breaks out, the pulse flutters, and the respirations become shallow and irregular. These symptoms pass off when the ligature is tightened and the organ removed. If such a condition happens when atrophied, cystic, or even cirrhotic ovaries are irritated, how much more is it likely to occur when the large, congested, tender ovaries of pregnancy are forcibly compressed against the hard post-partum uterus, and when the patient is either not under the influence of an anæsthetic or is only partially anæsthetized."

The following are three cases in detail to illustrate this:—

(1.) I. B., æt. 26, suffered from double salpingo-oöphoritis. Abdominal section was performed in the Royal Infirmary on 19th May 1886, and both ovaries and tubes were removed. The appendages on the left side were adherent and difficult to reach. When brought to the surface the pedicle was very short. The ovary was seized by a pair of Spencer Wells' forceps to hold it up while the ligature was applied. Immediately the patient's breathing became affected, the pulse fluttered, the face changed in colour, becoming bluish white, and a cold perspiration broke out. The patient was all the time fully, but not too deeply, anæsthetized, and her condition became quite satisfactory after the ovary was removed

(2.) Mrs T., æt. 31, suffered from double salpingo-oöphoritis with extensive adhesions. Abdominal section was performed in the Royal Infirmary on 2nd June 1886. Great difficulty was experienced in getting the appendages of the right side to the surface, and eventually only the tube was got away. The ovary and tube on the left side were both removed easily. The left ovary was grasped by a pair of forceps before the ligature was tied. The patient, who was breathing quietly and steadily at the time under the influence of ether, and with a good colour in her face, suddenly gasped, became deathly pale, retched violently, and manifested all the symptoms of shock. On the removal of the ovary she quickly recovered, and her condition remained satisfactory till the end of the operation, from which she made a good recovery.

(3.) Mrs W., æt. 36, suffering from a bleeding fibroid tumour of the uterus, reaching one finger's-breadth above the umbilicus. The sound passed 5 inches into the uterus. The ovaries and tubes were removed on 4th April 1887 in Ward XXVIII., Royal Infirmary. The ovaries were found practically sessile on the uterus, owing to the shortening and splitting up of the broad ligaments by the fibroid growth. Ordinary ligatures could not be applied; the clamp and cautery were used. Each time the clamp was applied the patient manifested symptoms of transient shock, similar to those already described. The clamp included a small portion of each ovary in its grasp, and very soon after it was thoroughly tightened the symptoms disappeared.

Curiously enough, the fibroid uterus in this case was rotated so that the left ovary lay almost immediately under the incision. The tumour had to be considerably rotated round to the left before the right ovary could be reached.

Amand Routh has found that "dilatation of the cervix by bougies, tightening the serre-nœud in hysterectomy, tying the pedicle in ovariotomy, sponging out Douglas's pouch, or freeing matted ovaries and tubes from their adhesions, are all similar in being liable to produce shock, intermission or omission for two or three beats of the pulse, and temporary cessation of respiration. Vomiting is also apt to be set up by rapid dilatation. All these phenomena are lessened by deep anæsthesia, which usually allows the operation to be proceeded with. In one case the operation had to be discontinued."

We can further find a similar analogy to this in the case of the testicles. Both the ovaries and the testicles are richly supplied with nerves, derived in each case from the great sympathetic system.

Valentin has clearly established the homology of these organs. He says:—"The first origin of the ovary and testicle is entirely analogous, and both develop in the same way for some time, until the period when a different character indicates itself, when the continuation of the development of a tubular gland ceases in the ovary, and the characteristics of its first structure become more and more difficult to distinguish."

Instances of shock occurring after injury to the testicle are very numerous.

Pirogoff speaks of a judicial case where death by shock speedily followed upon intentional crushing of both testicles. The section showed only extravasated blood in the tunica dartos and under the albuginea.

Erichsen has observed during castration, at the moment of cutting through the spermatic cords, a sinking of the pulse, even when the patient was completely anæsthetized, so that it seemed better to stop using chloroform at the moment.

Fischer has observed shock resulting from the too tight strapping of inflamed testicles.

Vincent records a case of passing shock after a kick on the testicle, and Hosteing a similar case after crushing of the testicle on the saddle.

Pelikan has shown that bruises of the testicle or spermatic cord are more apt to produce shock than clean wounds.

Hunter saw a sudden death during castration, and dangerous convulsions during an operation for hydrocele.

Why, then, should not shock occur just as well after bruising of the ovary as it does after bruising of the testicle?

Any strong irritation of the peripheral sensitive nerves, or of the sympathetic nerves, is capable of engendering a condition of exhaustion of the spinal cord, which manifests itself in weakening of motility, sensibility, and reflex power, and in a depressing influence on the heart and respiration.

Shock is a functional disturbance, and has no real pathological anatomy, though after death there is sometimes to be found enormous distention of the abdominal bloodvessels, supposed to be due to paralysis of the splanchnic nerves.

The theories as to the production of shock are endless. Irritation of the vagus, simple paralysis of the heart, or reflex, partial, or general vascular paralysis, cannot wholly account for it. The attempts to explain it by saying that it is due to contraction of the small arteries, or to changes in the composition of the blood, have not been proved. In short, the vascular apparatus and its contents give no satisfactory explanation of shock. The only satisfactory hypothesis, according to Groeningen, is "that which occupies itself with the whole sphere in which the appearances we have considered originate." The most feasible explanation is that shock is an exhaustion of the medulla and of the spinal cord, caused by violent injuries. The irritations which influence sensitive nerves can be classified, according to the resulting excitement, into four stages (Groeningen):—

(*a.*) The lowest stage is ineffectual. The excitement does not go beyond the threshold of consciousness, and evokes no other appreciable effect.

(*b.*) The middle stage destroys (auslösen) the proportionate feeling.

(*c.*) The strong stage effaces the fineness in the feeling of quality, and permits the feeling of pain, or one akin to it, to come into the foreground.

(*d.*) The highest destroys every feeling, fugitive or lasting.

The lower stage of irritation, applied with or immediately after a higher one, remains without effect; or, as Fourneaux Jordan well puts it, "Shock is to a certain extent a protection against shock."

Every excitement of a nerve calls forth in itself, as well as in the central organs, a change tending to fatigue; the collective appearances of reflex stoppage, and of reflex paralyses, are thus explained in a satisfactory way.

Brown-Séquard believes that irritations of nerves may produce three kinds of shock:—

1. Shock where reflex arrest or diminution of the heart's action predominates.

2. Shock where there is a peculiar inhibitory influence on the central organs of respiration, the heart continuing to beat with more or less vigour.

3. Where a powerful influence is exerted by the nervous centres on the nerves able to act on circulation, secretion, and nutrition, so as to produce a cessation of most, if not all, the ordinary interchanges between blood and tissues. In this third form of collapse the bloodvessels are generally contracted; there is always a diminution of breathing, and a weak, sometimes slow, pulse.

Watson lays special stress on the fact that shock is determined in intra-peritoneal operations from reflex action by irritation of the sympathetic.

Kaltenbach considers reflex paralysis of the heart to be the essence of shock in abdominal operations. He goes on to say that in the milder cases the symptoms of shock subside as soon as the cause is removed,—for example, after the cessation of extensive manipulation of the intestines. In some cases, however, the patients die during the operation, or within three or four hours afterwards.

The splanchnic is the vasomotor nerve of the intestinal bloodvessels, so that it governs the largest muscular area of the body; it is likewise the sensory nerve of the intestine, and under certain circumstances it may give rise to very painful sensations. According to Landois and Stirling, the trigeminus and splanchnic nerves are the most sensitive to pain in the whole body.

Fourneaux Jordan, in his classical essay on Shock, says, "The peculiar condition which more than any other influences shock is the susceptibility or excitability of the nervous system."

Injuries of the abdominal viscera are always marked by extreme and severe shock. This is to be explained by the impression made upon the cerebro-spinal system through the medium of the ganglionic. Women are probably more influenced by reflex irritations than men, and are liable to a severer form of shock.

Conditions which may simulate Post-partum Shock.

(1.) *Syncope from Hæmorrhage.*—There is no doubt that not only are syncope and shock often associated with one another, but also that the manifestations of shock are frequently intensified by the co-existence of hæmorrhage, which may or may not have gone so far as to produce syncope. At the same time the two conditions are quite separate and distinct, and in the majority of cases are easily distinguished from one another. There has been and still is a great deal of confusion on the subject; some writers under the title of "Collapse" including both conditions, and others drawing hardly any distinction between them. This confusion is mainly due, I think, to the many pathological theories which have been advanced regarding the nature of shock, most of which were erroneous, and calculated to mislead the clinical observer. I feel sure that the two conditions are frequently confounded, and that many cases of shock after labour are erroneously described as arising from the effects of hæmorrhage. I shall have occasion again, however, to refer to this point.

Nothnagel has very clearly pointed out the differences between syncope and shock, and I cannot do better than quote some remarks he makes with regard to their differential diagnosis. He says:—"After successful delivery, profuse hæmorrhage occurs on account of faulty contraction of the uterus. If energetic measures be not taken at once, all the symptoms of fainting appear, and there accompany them, with or after fainting, the strongest general convulsions, very like epileptic. The symptoms are oppression, sighing and rapid respiration, yawning, paleness of the face, increase of oppression with giddiness, feeling of general torpidity, cold perspiration, singing in the ears, sickness, and inclination to vomit; the sight is darkened, and the surrounding voices cannot be heard. The pulse is regular, but small and of low tension, and there is quick recovery as a rule.

"Shock is quite different from this. In pure shock there is no singing in the ears, no oppression, no giddiness, no darkening of the sight. There is irregular, weak, and rapid pulse, and irregular breathing. There is no twitching of the muscles, no epileptic convulsions, not such a marked loss of consciousness, and no quick recovery."

In the torpid form of shock the senses and consciousness are benumbed, the eyes are dull, vacant, and motionless, with dilated pupils, and there is subnormal temperature. The patient at first complains of coldness and numbness of the limbs, and often the sphincters are relaxed, and there may be a tendency to nausea and vomiting. Shock usually produces a degree of syncope as well. In my cases the complete unconsciousness was undoubtedly due to syncope which was superadded to the shock. In all cases careful investigation must be made as to the existence of hæmorrhage, concealed or otherwise.

(2.) Shock has also to be distinguished from the effects of an overdose of ergot or ergotin. I have once seen such a condition, where undoubtedly more ergotin had been administered to a patient than was either necessary or safe. The patient complained of giddiness and loss of sensation, and the respirations were shallow and slow. There had been hardly any hæmorrhage in the third stage, but the uterus was flabby, and the ergotin had been given mainly from a prophylactic point of view. These symptoms soon passed off after free stimulation. The pulse was not affected. Lauder Brunton has found that a solution of Bonjean's ergotin injected into animals causes an affection of the nervous system indicated by inco-ordination, anæsthesia, and paralysis, and death is due to paralysis of respiration. The muscles are unaffected, and the motor nerves are not paralysed. The sensory nerves and spinal cord are paralysed. Ergot acts directly on the inhibitory apparatus in the heart itself, and tends to slow it and ultimately to stop it in diastole. There is usually a rise of blood-pressure at first from its stimulating action on the vasomotor centre in the medulla, and owing to the firm contraction of the intestines and uterus rendering them devoid of blood, an extra quantity of blood is thrown into the rest of the circulation.

(3.) The uræmic coma, so often seen in puerperal eclampsia, is easily diagnosed from shock by the history of the convulsions, the nature of the pulse, and the state of the urine.

(4.) Pulmonary emboli from venous thrombosis are the commonest cause of collapse and sudden death in the post-partum state, and might be mistaken for severe shock. Sudden dyspnœa and orthopnœa usually indicate this condition. Wernich has recently stated that in his opinion so-called shock is often due to small emboli.

(5.) The entrance of air into the veins immediately after delivery causes symptoms very similar to pulmonary embolism. Asphyxia and collapse usher in death.

(6.) Collapse and possible sudden death may occur after labour as a result of pre-existing disease which has been aggravated by the labour. For example, I have seen two cases where collapse and death followed soon after labour in patients who were suffering from mitral stenosis, and Barnes records a case of sudden insensibility followed by death, where post-mortem a hæmorrhage was found to have taken place in the left optic thalamus.

(7.) Collapse or sudden death may likewise occur post-partum from totally accidental causes, as, for instance, in a case of Simpson's quoted by Auvard, where death rapidly followed the rupture into the peritoneal cavity of a large hepatic abscess.

Hysteria and epilepsy must also be kept in mind as possible causes of insensibility after labour.

(*To be continued.*)

VI.—SOME PRACTICAL RESULTS FROM THE CHEMICAL EXAMINATION OF THE CONTENTS OF THE HEALTHY STOMACH.

By ALEX. LOCKHART GILLESPIE, M.D., F.R.C.P. Ed., Medical Registrar, Edinburgh Royal Infirmary.

(From the Laboratory of the Royal College of Physicians, Edinburgh.)

(*Read before the Medico-Chirurgical Society of Edinburgh on* 18*th January* 1893.)

(*Continued from p.* 51.)

EXPERIMENT V.—Another similar experiment performed with a glucose solution resulted in the acidity after a few hours being equal inside and outside.

The deductions from these experiments are as follows:—1. That proteids in solution have the power of attracting, and probably combining with, hydrochloric acid. 2. That this acid so combined, even if greater in quantity and strength, does not prevent more free hydrochloric acid from dialysing through. 3. This combined acid, if placed in a dialyser with water round it, does not dialyse through so quickly as the uncombined acid. 4. That hydrochloric acid has no power of combining with carbohydrates, at least with starch or glucose. 5. That as digestion proceeds, and the lower proteids pass through the membrane, the combined acid passes through with them, and the total acidity inside falls. 6. If in one case the acidity outside be less, and in another greater, the contents being much the same, the acidity inside does not vary in proportion. 7. That, if the proteid varies in concentration, the acidity varies with it. 8. That the presence of pepsine increases the avidity with which hydrochloric acid combines with proteid bodies. The experiments on milk prove conclusively that the increase of acidity varies directly with the density of the contents; but considering the experiment on potato, it is seen that in these experiments it is not the density of the whole bulk of the contents which is the factor at work, but the proportion of proteids in them. In the series of digestions of milk, for instance, where the proportion of proteid is comparatively high, the acid curve is high. In the potato experiment the proportion of proteids is extremely small (König states that potato contains 2 per cent. of proteids), the combined acidity is low; while in the experiment on substances almost purely proteid in character, the acidity was still rising when the experiment had to be stopped.

9. It is possible to ascertain roughly the proportion of acid which combines with proteids. In the milk series it varies from 8·1 per cent. to 17·5 per cent., and considering, as above, that potato contains 2 per cent. of proteids, the amount of acid combined is between 7 and 8 per cent. at the third hour, but is probably higher, as the quantity of proteid which had dialysed was not noted; while in the third experiment, if the proportions are worked out, excluding the figures at one hour, which give a figure of 32 per cent., the percentages of acid to proteid vary from 10 per cent. to 18 per cent.

10. It will be seen from all these experiments that hydrochloric acid begins to dialyse through at once: indeed, it has a remarkable power of rapid dialysis,—thirty-four times greater than that of common salt, according to Graham.

11. It will also be seen from Chart II. that the presence of a small quantity of combined hydrochloric acid in a solution prevents the free hydrochloric acid inside reaching the height of that outside. In all these experiments, as the acid outside was purposely in very large excess, so that it might resemble the proportionally inexhaustible reservoir of hydrochloric acid in the healthy body, so the amount of the acidity outside varies little during the experiment. The combined acidity represents the amount of digestive work done, the free acidity the potential power of further digestion.

12. The total solids in an artificial digestion, carried on in a dialyser, rise rapidly in the filtered contents until the second or third hour, and then fall; the inorganic part, however, falls sooner, reaching its maximum at the first hour or hour and a half.

13. The proteids in solution increase up to the third hour if in large pieces at first, up to the second if more finely divided, and then fall.

14. In unfiltered specimens with principally a proteid composition the acidity is greater than in filtered specimens, but before the end of digestion may fall below it.

The Course of the Acidity and its relations to the Contents of the Stomach in Man.

I now performed some similar experiments on *gastric digestion in man*, and to enable me to do this I was fortunate enough to find a patient suffering from a slightly dilated stomach, but whose chief

CHART V.

NATURAL DIGESTION OF CARBOHYDRATES.

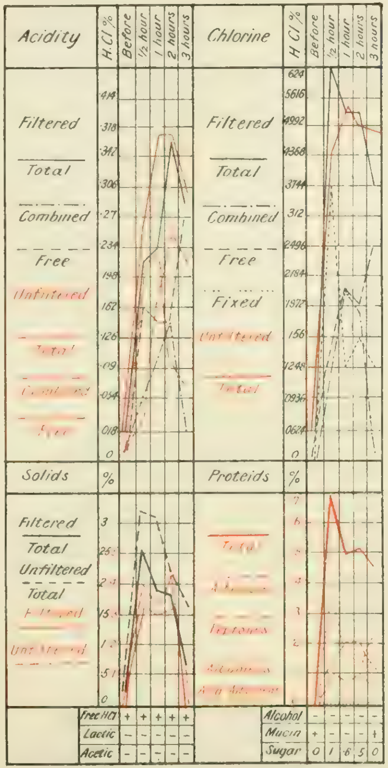


CHART IV.

NATURAL DIGESTION OF PROTEIDS.

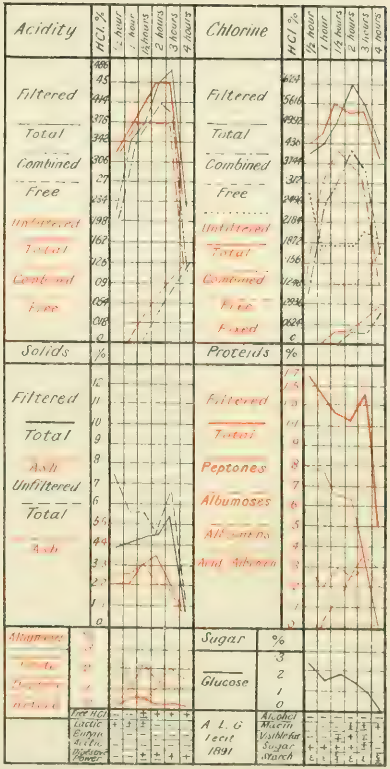
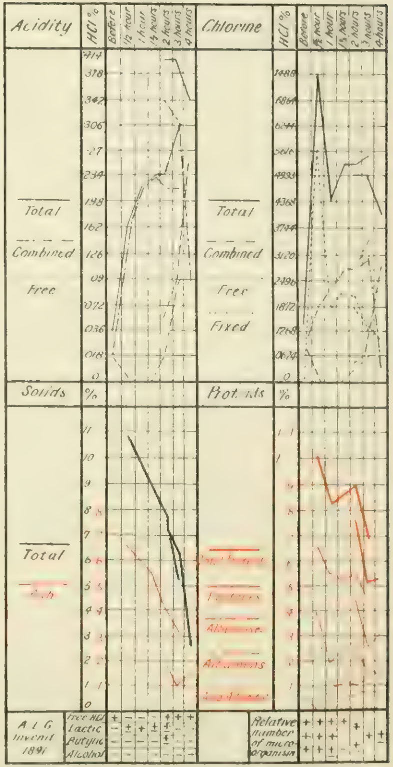


CHART III.

NATURAL DIGESTION OF PROTEIDS.



The patient, T. B., taking an interest in the acidity of his stomach, gladly consented to place that organ at my disposal for its examination. He had, moreover, become such an adept in passing the stomach-tube, that, without the help of cocaine to dull the pharyngeal reflex, but with the aid of a small quantity of glycerine to moisten the outside of the tube, he could pass it into the stomach, siphon off the contents into a small receptacle, and remove the tube without allowing a drop of the fluid to enter his mouth or a drop of saliva to fall into the dish. So that the proceedings were conducted with a minimum of discomfort and a maximum of accuracy. In all, I carried through four experiments on this patient:—

1. On gastric digestion after a meal of bread and butter, white fish and coffee.
2. On gastric digestion after a meal of mince, bread and butter, and a cup of water.
3. After a breakfast consisting solely of porridge, no milk or water being taken.
4. After a meal of ripe greengages.

During the first experiment the supply failed at the third hour, and the experiment had to be stopped; but two days after, he took a similar breakfast, and the analyses were begun at the second hour, the results being incorporated with those of the previous *séance.*

All the experiments were done in the forenoon after breakfast, except the last, in which the fruit was taken for lunch some four and a half or five hours after breakfast, when the stomach was presumably empty.

Experiment VI.—Half an hour before breakfast the patient experimented on passed the stomach-tube and drew off a small quantity of fluid,—having, however, to pour in about an ounce of water before the siphon action would work. The fluid obtained was colourless, slightly opaque, and contained a few flakes of mucus. There was only sufficient to estimate the acidity and chlorine; analysis of the total solids, ash, and proteids had to be left out. Breakfast was now taken, consisting of coffee, bread and butter, and some white fish. The contents of the stomach were then withdrawn at half an hour, one hour, an hour and a half, two, three, and four hours after. From the half hour up to the three hours, the results were calculated from the first day's *séance*, but, as I stated above, there was not sufficient fluid to enable the experiment to be proceeded with, so after a similar meal two days later, the fluid obtained was analysed at the second, third, and fourth hours.

The results of the analyses are depicted on the following chart (Chart III.), the double line at the second and third hours representing the two different sets of analyses, and it will be seen that they are very similar, the increased acidity of the second being probably due to the fact that no fluid had been previously withdrawn.

Each time the contents were siphoned off the following procedure was adopted:—About 30 c. cms. were, as a rule, procured; 20 c. cms. of this were filtered, and either 5 c. cms., or if only a small quantity of the fluid was available, 2 c. cms. were used to estimate the total acidity and chlorine, a drop of dilute nitric acid being added, after neutralization with the soda, to prevent the phosphates from precipitating the silver solution. 2 or 5 c. cms. were set aside to evaporate. 10 c. cms. of the filtrate were placed in a weighed capsule—sometimes only 5 c. cms. were available—dried at 110° C., weighed, then incinerated. The fluid left was used to estimate the proteids, being neutralized first to precipitate the acid albumen, the filtrate boiled with acetic acid and filtered, and the filtrate saturated with ammonium sulphate to separate the albumoses from peptones.

The fixed chlorine was calculated from the ash left in the capsule after incineration, and the free and combined acidity and chlorine from the portions which had been set aside to evaporate, in a similar way to the total acidity and chlorine estimation.

A drop or two of the fluid was used to test for free HCl with phloroglucin-vanillin, for lactic acid and for alcohol.

The analysis of the unfiltered contents was only carried out in the second half of the experiment.

At each period also, before the fluid was tested at all, gelatine tube plates were inoculated from it by means of sterilized platinum needles. Unluckily, however, I could only manage to overtake a qualitative estimation of the organisms grown, the amount of time taken in working out the results of the rest of the experiment precluding my paying sufficient attention to the plates to enable me to separate out and identify pure growths of the organisms present. The number fell from innumerable colonies on the first plate to a few, twelve or so, on the last. Some were yeasts, and some formed white non-liquefying colonies on the gelatine; but the majority consisted of germs which liquefied the gelatine, and which produced a powerful putrefactive odour,—probably some variety of the Bacillus subtilis and of the Bacillus liquefaciens ilei.

1. *Filtered.*—As noted above, the fluid obtained before breakfast was very scanty, diluted with water, and with some flakes of lymph or mucus floating in it; its acidity was ·036 per cent. HCl, half of which was free, half combined to proteids. With only a trace of fixed chlorine the total chlorine was above ·1248 per cent.

On contrasting the curves of the total acidity and total chlorine during the rest of the experiment, it is seen at once that there is a striking difference. The acidity rises quickly to ·162 per cent., then increases slowly during the next hour and a half up to ·234 per cent., when again it takes a jump upwards to ·306 per cent. at the third hour; in the second part of the experiment it shows a fall between the third and fourth hours. The total chlorine, on the other hand, in half an hour reaches ·7488 per cent., and then falls in the next half hour to ·4368 per cent.; a slight rise to ·5193 per cent. at the third hour, and a fall at the fourth, completes the curve.

Before explaining the apparent discrepancy, the curves of the combined acidity and chlorine should be studied. It will be seen at once that they are almost identical. The acidity not driven off by heat rises with the total acidity to ·234 per cent. at the hour and a half, then falls slightly; the chlorine combined to albuminoids rises in a similar manner to ·26 per cent., then rises slightly; while the acidity in the second part of the experiment falls rapidly from ·342 per cent. to ·09 per cent., the combined chlorine in the same part falling from ·28 per cent. to ·057 per cent.

The acidity up to an hour and a half was all combined, and a small piece of fibrin placed in a few c. cms. of the fluid taken at that hour showed no traces of digestion after twenty-four hours at 40° C. At the second hour, however, free HCl—only ·018 per cent., indeed —made its appearance, and the combined acidity fell a little below the total. A small piece of fibrin, which had been previously boiled, placed in a few c. cms. from this hour's fluid, was completely digested by twenty-four hours. At this hour, also, the patient began to feel uneasy. Rising to ·09 per cent. at the third hour, during the fourth the free acid curve reached ·252 per cent., and by this time the patient was suffering from considerable pain. The free chlorine—as HCl—followed exactly the steps of the free acid, but the curve of the fixed chlorine was very different, rising, as it did, in half an hour from almost zero to ·5616 per cent., then falling to ·1872 per cent., and, after a temporary and slight recovery, further to ·09 per cent.

It is now apparent that the reason of the irregular chlorine curve was due to the inorganic chlorides—in fact, to the salt swallowed with the food—most of which were quickly absorbed, and doubtless secreted again as free chlorine,—that is to say, as HCl.

The acidity and chlorine then fell between the third and fourth hours, the total amounts slightly, the combined largely, while the free increased proportionately.

Turning now to the total solids, it is seen that they fell progressively from 10·9 per cent. to 2·6 per cent., the fall becoming more rapid during the later hours, and corresponding to the fall in the combined acid and chlorine. The inorganic constituents also fell in much the same ratio from ·65 per cent. to ·32 and ·1 per cent.

The total proteids were much less in amount than the solids: the largest quantity, 1·1 per cent., was at the half hour largely composed of peptones and albumoses; then falling to ·82 per cent., they rose at the hour and a half, till at the second hour they reached ·9 per cent., when another sudden fall occurred.

Of the individual proteids, those coagulated by boiling will be seen to rise gradually to the finish, the amount present being very small; the acid albumen remained merely a trace, a cloudiness on neutralization, and unweighable, throughout the experiment. The peptones and albumoses, beginning high, fell at the half hour, rose up to the second, and then diminished again.

Lactic acid was present from the half until the second hour, but only in decided quantity at the hour. At the second hour there was a trace of butyric acid.

No alcohol could be discovered at any time during the experiment.

2. *Unfiltered.*—The figures contrast very considerably with the last half of Chart III. (the unfiltered contents were analysed only during the second half of the experiment).

The total acidity and chlorine, at first much above the former totals—·45–·386 per cent., ·5916–·4992 per cent.—become equal to them at the fourth hour.

The combined acidity and chlorine, also above those noted before, remain slightly above them at the end of the experiment—·108–·09 per cent., ·0936–·0312 per cent.

The free acidity and chlorine is, on the whole, slightly below that in the filtered specimens, the acidity free at the end being ·234–·252 per cent., the chlorine ·1872–·2808 per cent.

The total solids, at first as 13 per cent. to 7·09 per cent., at the third hour 9·8 per cent. to 6·2 per cent., and finally as 4·3 per cent. to 2·7 per cent., keep a constant relationship with those in the last table, the ash also being slightly in excess. The organic solids—that is, the total solids minus the ash, and also after subtraction of the combined chlorine—are at the three different hours:—Unfiltered, 12·244 per cent., 9·175 per cent., 4·206 per cent.; filtered, 6·89 per cent., 5·65 per cent., 2·442 per cent.

Hydrochloric acid in the free state could be detected by Günzberg's reagent on each occasion. Lactic acid was not present in either, nor was there any alcohol.

(*To be continued.*)

VII.—THE DISORDERS OF SPEECH.

By John Wyllie, M.D., F.R.C.P. Ed., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh; Lecturer on Medicine in the Edinburgh School.

(*Continued from page* 13.)

Amnesia Verbalis and Paraphasia. Articulative Amnesia, and Articulative Ataxia.

Amnesia Verbalis.—As I have already said a good deal about this Amnesia, or forgetfulness of words, and about the law which seems to determine the varying degrees in which different classes of words may be forgotten, it will not be necessary, in this general sketch of leading phenomena, to discuss the subject much further. But I should like to define, as distinctly as I can, the sense in which I mean to use the term Amnesia Verbalis. By different writers, it has been used with a varying width of signification. I mean to use it solely in connexion with the *productive* processes of thought and speech, as signifying a failure to call up in the mind the appropriate word-images for ideas that are seeking embodiment in words, whether for purposes of silent thought or for those of audible speech. For failure in the Interpretation of words that are still heard as sounds, we have the convenient term Word-Deafness. But, for failure to call up words in the memory when they are wanted for purposes of production, we have no term but this of Amnesia Verbalis. I think that we should reserve the term strictly for this failure in the power of calling up words from within, and let the term Word-Deafness stand as the equivalent term for failure in reception and interpretation.

In connexion with Written language, it may be found convenient, in like manner, to use the term Amnesia Literarum as indicative of a failure (on the productive side) to call up the images of letters and words in the mind when the effort to write is being made; in contrast to Word-Blindness, which implies a failure on the side of reception and interpretation.

Without entering into any detail as to the causation of Amnesia Verbalis, we may, I think, here make note of two different conditions which may each produce it:—

(1.) It is met with in conditions of General Enfeeblement of the Brain, such as may be associated with the debility of severe fever, or be produced by the pressure of effusion on the brain as a whole. In such conditions, the mind as a whole is enfeebled, and its faculty of language shares in the enfeeblement. In the debility of severe fever, forgetfulness of names and other nouns is common; and cases have been recorded in which foreign languages that the patient had been master of have, for the time, been quite forgotten, though the native language, more deeply imprinted, has been retained.

(2.) Local disease in the Speech Centres. That such disease should produce Amnesia Verbalis, when both the auditory and the motor centre are involved, is easily intelligible; but why should this Amnesia be so well marked in most of the cases in which only one of the primary centres has been destroyed? Why should the mind not be able to call up with ease the images of the other centre? I think we can explain this only on the hypothesis that in health the two word-images are habitually revived together as a "Word-Percept." When one of them is destroyed, the word-percept is mutilated and incomplete, and cannot be so easily revived.

It is notorious that amnesia of nouns, etc., results when the

Auditory word-centre is destroyed. In such cases, as the patient retains the power of articulation (the motor centre being intact), his speech demonstrates the amnesia of nouns, etc., in the most striking way.

But when it is the Motor centre that is destroyed, and articulation is therefore impossible, Amnesia is not so plainly exhibited. In such cases, Amnesia certainly does not exist if the patient still retains the power of expressing his thoughts in writing; but his loss of the power of writing does not enable us to say with certainty that the patient has Amnesia, and is unable to call up words in his mind. In such cases, some observers, such as Lichtheim, show the patient a common object, and ask him to indicate with his fingers how many syllables its name contains. There can be little doubt that, in most cases at least, destruction of the motor centre, like destruction of the auditory centre, causes serious Amnesia Verbalis.

PARAPHASIA.—When an aphasic patient, in speaking, uses words which he did not intend to use, and which do not express the thought that is seeking expression, he is said to display the phenomenon of Paraphasia. In some cases, no sooner is the wrong word uttered than the patient recognises his error, and strives to correct it; but in other cases, owing to Word-Deafness, he does not recognise the error, and may go on talking freely, in the full belief that he is expressing himself intelligently, even although the speech produced is mere "gibberish"—as it may be, in rare cases, when the phenomenon is extremely well marked. It is in the Aphasia produced by lesion of the Auditory Word-centre that Paraphasia is most marked. The retention of the power of articulation, in such cases, makes the recognition of Paraphasia very easy. Some think that Paraphasia never occurs except in these cases of Sensory Aphasia. But this is probably a mistake. Paraphasia is essentially one of the possible consequences of Amnesia Verbalis; and, as such Amnesia probably exists in Motor as well as in Sensory Aphasia, we need not be surprised to find a slight degree of Paraphasia exhibiting itself in connexion with Motor Aphasia, when, by education of the opposite convolution, the patient is in process of recovering his powers of articulation, and can speak well enough to exhibit it. Nevertheless, it is true that a marked degree of Paraphasia is especially characteristic of the Sensory, or Auditory variety of Aphasia. Like Simple Amnesia Verbalis, Paraphasia is exhibited most frequently in connexion with nouns, of which one is substituted for another; but, in marked cases, the other parts of speech suffer in the same way.

ARTICULATIVE AMNESIA.—Instead of a total forgetfulness of a word, such as a noun, the patient may exhibit only a partial forgetfulness of it. He has a general idea of the word, but fails to remember it in detail. In such circumstances, he pronounces a sound that may or may not be sufficiently like the word aimed at to enable the listener to guess what that word really is. I propose to use the term Articulative Amnesia for this forgetfulness of the details of articulation. It will sometimes be found associated with other symptoms, such as marked paraphasia, which point to the existence of lesions in the auditory centre. This is only an illustration of the fact, that words are represented in all their details in the sensory as well as the motor speech-centre.

ARTICULATIVE ATAXIA (*Asynergia Verbalis*).—Here, owing to disease in the Motor centre, or in the white substance of the brain immediately subjacent to it, the power of articulation is destroyed, even if the patient is able to call up the auditory image of the word in his mind. It is not always possible to distinguish between an Articulative Amnesia and an Articulative Ataxy. But in general the faults of articulation in lesions of the motor centre are so strikingly characteristic that there can be no difficulty in diagnosing Articulative Ataxia. Lesions in this locality generally make the patient practically speechless. He can articulate scarcely anything; failing even to repeat simple words that he is asked to repeat. The educated centre being destroyed, he is thrown upon the scanty resources of the uneducated centre of the opposite side. Often, as we have seen, he can emit only some Recurring Utterance, or some very common words, such as "Yes" or "No." It is generally when he is recovering the power of speech, by the Further Education of the previously uneducated centre, that he displays more varied faults in articulation. Gradually acquiring an increasing vocabulary, he continues for a long time to display, in a degree that differs greatly in different cases, the Articulative faults of Slurring, Lalling, Syllable-Stumbling, sometimes a little Stammering, and often an utterance that is slow and laborious. It is in these same circumstances also, as we have seen, that a case of Motor Aphasia may show Amnesia Verbalis, and even a slight degree of Paraphasia.

Mental Impairment. Echolalia.

MENTAL IMPAIRMENT.—It is doubtful whether it would be correct to say of any patient affected with Aphasia that his intellect remains altogether unimpaired. Probably there is more or less mental impairment in every case. Usually it is less distinct in purely motor aphasia than in sensory aphasia. A patient with purely motor aphasia is often capable of managing his business affairs. He expresses himself by signs if he cannot either speak or write. He may be able to engage with success in games of skill; and in all respects he may show himself to be intelligent and clear-headed. Yet, to those who knew him previously, there is generally observable a distinct diminution of mental power, or of self-control; and the patient himself is apt to complain that he experiences fatigue, and headache, and irritability, if he applies himself to mental work requiring prolonged and close attention.

In a large proportion of cases, the loss of mental power and of self-control is obvious. Very often the patient is unable to take any part in managing business affairs, dementia being quite pronounced.[1] As is so often the case in organic disease of the brain, the patient may be also very emotional and easily moved to tears.

In some cases, delusions and hallucinations are developed, so that the patient becomes really Insane. I think there can be no doubt that Dr Bastian is right when he says that destruction of the Sensory speech-centres is much more dangerous to the mind than destruction of the Motor ones. Delusions, and Hallucinations, and Hebetude of mind are certainly more commonly met with in cases of Sensory than of Motor Aphasia. Bastian provisionally formulates the following as a working hypothesis:—"That the tendency to mental impairment with aphasia, and the degree of such impairment, will, other things being equal, increase as lesions of the left Hemisphere which produce aphasia recede in site from the third frontal convolution, and approach the occipital lobe." It seems very probable that growing experience will soon convert this "working hypothesis" into an established law.

ECHOLALIA.—We have seen, in connexion with our study of the Speech of the Insane, that Echolalia is pretty often exhibited by patients who are the subjects of Dementia. As Dementia is not uncommon in connexion with Aphasia, the Echolalia which, in rare cases, is exhibited by patients with right-sided Hemiplegia and more or less Aphasic disturbance of speech, should perhaps be attributed rather to the Dementia than to the Aphasia. But there are some very curious and rare cases of Aphasia without Dementia in which the patient can repeat what he hears, and perhaps copy writing that he sees, and yet be totally unable to understand the words he thus repeats or copies. This is a true Echolalia. The consideration of this phenomenon will probably be resumed in a future paper. At present, I mention the phenomenon only to show that in testing the speech of an aphasic patient we must not be content with merely testing the Reception and the Production of speech, spoken and written, but must also ascertain how the patient Repeats or Echoes. Can he repeat words spoken to him; can he write to dictation; and can he copy from a printed or written page?

Other forms of Loss of the Memories of Signs (Asemia) that are related to Aphasia and sometimes found associated with it. Mind-Blindness. Expression of Emotion. The Musical Faculty.

LOSS OF OTHER GRAPHIC SYMBOLS.—With the destruction of word-images, in Aphasia, there is often associated destruction of the memories of other symbols, which are allied to those of speech. Thus a Word-blind patient is often also Figure-blind, so that he may fail to recognise the ordinary Numerals when he sees them. Equally unintelligible to him may also be Algebraic signs, and the signs used for Musical Notation; although, previously, these may have been very familiar to him. There are, however, cases in which the understanding of some of these other symbols may be retained, though speech symbols be lost. Thus patients are often able to read figures though they cannot read words. They are able, for example, to read the figure 3, though they cannot read the word *Three*. In explanation of this, it has been suggested that figures are more nearly allied to pictures than to words, and suggest the number to the mind as a picture suggests an object. Perhaps when figures are much used both hemispheres may acquire the images of them.

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[1] For a discussion of the Medico-Legal relations of Aphasia, see Bateman, *On Aphasia*, chap. x.

Amimia and Paramimia.—When intelligence is retained though speech is lost, the patient can in most cases express his thoughts in pantomime (gesture language). He nods his head for "Yes," and shakes it for "No," and indicates numbers with the fingers of the hand that is not paralysed. He also, like an uneducated deaf-mute, imitates actions, and "makes pictures in the air." But some cases of Aphasia show impairment of this gesture language; and there may be impairment also of the power of understanding the gesture language of others. In rare cases, again, the patient has been found to use pantomimic signs *wrongly*, nodding his head, for example, instead of shaking it, when he meant to say "No." Amimia is the term used for the loss of gesture language, and Paramimia that for mistakes in its use. That a one-sided lesion of the Brain should in some cases cause Amimia and Paramimia seems to show that in some brains, at least, the education in these signs, as in those of speech, is, at least to a considerable extent, unilateral.

Mind-Blindness (*Seelenblindheît, cécité psychique*).—It would be better perhaps to term this condition "Object-blindness" than "mind-blindness," though even that term might be liable to misinterpretation. What is meant by the term "Mind-blindness" is that though a formerly familiar object is clearly seen by the patient, it is no longer *recognised*. Familiar friends are no longer recognised at sight, and familiar objects seem strange at sight, so that their natural uses may be mistaken. Like some of the other phenomena which in this paper I have been briefly summarizing, this condition will require to be noticed in the future papers. I shall at present only state that this Object-Blindness or Mind-Blindness is sometimes found associated with word-blindness, and, like it, seems to depend upon the obliteration of formerly acquired visual images or memories. In at least one of the recorded cases of it, disease was found in both sides of the brain; and it seems reasonable to suppose that the images or memories of objects must, in most, if not in all brains, be imprinted equally in both hemispheres.

RETENTION OF THE POWER OF EMOTIONAL EXPRESSION.—In Aphasic patients, even when Pantomime is impaired, the power of facial expression of emotion may remain intact; so that gladness and sorrow are as vividly depicted on the countenance of the patient as on that of a healthy person,—provided always, of course, that the intelligence is not very seriously impaired. Thus when, as is so often the case, there is loss of self-control, the sudden fits of depression of spirits to which the patient is so liable find expression in tears, and flushings, and facial movements, as vividly as similar emotions in children. Evidently Emotion and its expression are functions that belong to both hemispheres of the Brain.

THE MUSICAL FACULTY.—There are on record many cases of Aphasia in which the patient, though speechless, was yet musical, and able to hum correctly tunes without words. In one very curious case, an aphasic patient, though unable to *speak*, could yet *sing songs with the words* correctly,—perhaps by aid of the "uneducated Speech-centres" of the opposite hemisphere. Most of these cases, no doubt, have been cases of motor aphasia. It is still a question for investigation how far the musical faculty is destroyed or diminished by destructive lesion of the left *auditory* centre. One is disposed to think that music must belong to both hemispheres of the brain, at least in so far as it is a natural gift and not merely an acquired art. But in one recorded case, to which I may afterwards have occasion to refer, word-deafness seemed to be associated with a loss of the power of appreciating music. This subject, and many of the others to which I have been briefly referring, are really subjects for future investigation. As yet they have received too little attention.

Having already made a note of some of the earlier contributions to the literature of Aphasia, I may here, in concluding this paper, supplement the list by adding a note of a few of the more important contributions of a later date.

I have already referred to, and frequently quoted from, Kussmaul's treatise on the *Disturbances of Speech*. It continues to be perhaps the richest mine we have of information upon the subject generally. Bateman's valuable work I have also referred to. A second edition of it was published in 1890. Two other treatises of great value are—(1), That of Bernard, *De l'Aphasie* (1st ed. 1885, 2nd ed. 1889), which incorporates the teaching of Professor Charcot; and (2), that of Dr Ross of Manchester, *On Aphasia*, 1887. Many important contributions to the subject have also been made in the shape of chapters upon it in works on the Nervous System. Among these may be mentioned—(1), The chapters in Dr Bastian's works on *The Brain as an Organ of Mind*, 1880, and on *Paralysis: Cerebral, Bulbar, and Spinal*, 1886; (2), a chapter in Professor Grainger Stewart's work, *An Introduction to the Study of the Diseases of the Nervous System*, 1884; (3), the chapter in Dr Ferrier's work on *The Functions of the Brain*, 1886; (4), the chapter in Dr Gowers's work on *Diseases of the Nervous System*, 1888.

Among the more important of recent German contributions are—(1), Grashey, "Ueber Aphasie und ihre Beziehungen zur Wahrnehmung," *Arch. f. Psych.*, xvi., S. 654; (2), Lichtheim, "Ueber Aphasie," translated by Dr de Watteville, in *Brain*, Jan. 1885; (3), Wernicke, "Die neueren Arbeiten über Aphasie," *Fortschr. der Med.*, 1885, ii., p. 825; also i., 1886, p. 371; also ii., 1886, p. 463.

I shall by-and-by have occasion to refer to various important papers on special parts of the subject. The wealth of literature on the subject of Aphasia is overwhelming. If the reader would form an idea of it, let him consult the *Index Catalogue of the Library of the Surgeon-General's Office, U.S. Army*, edited by Dr Billings, and the *Index Medicus*, edited by Dr Billings and Dr Fletcher.

APHASIA IN RELATION TO ORGANIC DISEASES OF THE BRAIN:—PREFATORY NOTES AS TO THE SPEECH-CENTRES.

It is hoped that the reader remembers what has been said about the constitution of an Object-percept and of a Word-percept, and about the blending together of these two percepts in the consciousness. Lichtheim has constructed a diagram which is fitted to illustrate the constitution of the two percepts, and the relations of the one to the other; and Wernicke has modified this diagram by adding to it looped connecting-lines between the various centres that furnish the images for the object-percept.

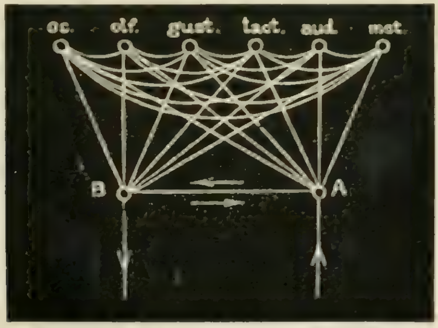

FIG. 1. (After Lichtheim; modified.)

In the diagram as here given, I have adopted Wernicke's addition, and have also slightly increased the number of the image-centres for the object-percept, so as to make them representative of all the centres tested in our series of little experiments with the apples.

In this diagram, the upper row of circles represents the centres for the various images which may go to form the percept or idea of an object—say, of an apple. The two lower circles, A and B, represent the centres for the two images, auditory and motor, which go to form the percept or idea of a word—say the word "apple." How, in certain circumstances, a word-percept or an object-percept can be entertained separately in the consciousness; and how, when the two percepts represent a familiar object and its name, they are in the consciousness blended together almost inseparably, we have already seen.

An examination of the diagram helps us to understand how, when the word "apple" is heard, its sound revives not only the word-percept, but also the object-percept; and how, on the other hand, when any one of the sensory images of the object-percept, such as that of smell, is revived from without, the revival calls up the other associated images that contribute with it to form the object-percept, and the revival of this, again, calls up, by association, a revival of the word-percept.

The two arrows passing in opposite directions between A and B indicate the close physiological connexion of these two centres—a connexion so close that, in health, it is probably impossible to call up the image at A without reviving that at B along with it, or to call up that at B without also reviving that at A.

But there are also many other points, already discussed, that indeed cannot be illustrated by a diagram and yet may usefully be noted in connexion with the diagram before us. I shall here shortly touch upon a few of them:—

(1.) Though it would make the diagram exceedingly complicated in appearance, I think it would make it more fully expressive of physiological fact, if every connecting line in it (looped and straight) were accompanied, like the line from A to B, with arrows pointing in opposite directions. As to the looped lines, we know already how the revival of any one of the chief images that go to form the object-percept of an apple can call up a revival of the others. This fact of itself shows that the reviving influences can travel in either direction. As to the straight lines between the upper circles and the lower, there can be no doubt that the main direction of current is that of a reflex arc from A to the upper circles, and from these down to B; and yet it is certain, in the case of A at least, that the currents may also flow in the opposite direction. Thus, in motor aphasia, in which B is destroyed, the auditory images of words may, to some extent at least, be revived at A, by descending currents from the sense-image centres, so that the patient may be able to call up words in the mind, though unable to utter them. In auditory aphasia, in which A is destroyed, it is not so certain that a motor image formed at B can, by exciting upward currents from B, throw a reflex of itself back into the sense-image centres, so as to keep the mind informed of the meaning of the words that are being uttered.

In many cases of auditory aphasia, the patient seems to have little consciousness of the words he is using at B, and often, in fact, uses wrong words without knowing that he is doing so. But it is not improbable that future inquiry will show that there is great variation in this respect. Even now, we can say that in some cases there is evidence of such a reflex being thrown back from B to the mind. These points, in due course, will be illustrated by examples.

(2.) The diagram gives no indication of the fact that, whilst the images which go to form the Object-Percept are probably imprinted equally well, or almost equally well, in both hemispheres of the brain, the images which go to form the Word-Percept are imprinted efficiently in one hemisphere only. This difference, as we have seen, is best explained by the closeness of educative attention required for the efficient imprintation of the intricate word-images.

(3.) The diagram does not indicate the possible juxtaposition in the brain of an object-percept image with one of its word-percept images. Take the object *a bell*, and the word "bell." One of the images or memories which go to form the object-percept of a bell is the sound-memory of its clang. Now, this memory is imprinted in the auditory sense-image centre, possibly in close juxtaposition with the sound memory of the word "bell." But, as indicated above, the memory of the clang is imprinted efficiently in both auditory sense-image centres, and that of the word only in one of them.

(4.) A diagram cannot show how, as pointed out by Charcot, the two word-images at A and B may have a relative importance that differs in different people. It will be remembered that in most people the leading and more important image is apparently that at A, so that most people may be termed *auditifs*; whereas in a few, the *moteurs*, the leading image is apparently that at B. It is on this hypothesis that we can best account for the fact that the same lesion, occurring in different individuals, may produce aphasia in different degrees of severity.

(5.) The diagram cannot teach anything of the relations of the Intelligence and Attention to the images that go to form the object-percept and the word-percept. Yet the intelligence and attention, as we have seen, are agents of prime importance in effecting the revival of these images; as they were also, originally, in effecting their formation or imprintation.

(6.) Lastly, let it be remarked that the idea represented by the combination of the upper circles of the diagram is the idea of a concrete object, such as an apple. It is a "percept," properly so called. Would it be possible to represent diagrammatically a "concept," such as that indicated by the word "nation"? Evidently it would be impossible. And if it would be impossible to represent diagrammatically any nouns other than those of one particular class, what can we say about adjectives and the other parts of speech? Who could localize in the brain the idea represented by the adjective "beautiful"? The fact is that, by localization and diagrammatic representation, we can, as yet, do no more than merely touch the fringe of the great question as to the nature of ideas, and their relation to speech. But it is something, even to touch the fringe of such a question.

It is now time for us to look at the localization of the various stores of word-images in the cerebral cortex. In indicating these localizations, I shall employ the very useful outline sketches of the cerebral convolutions that are used by most of the recent French authors.

Here, then (Fig. 2), in such an outline sketch, are indicated the positions of the four centres in which are stored the memories or images of speech, audible and visible.

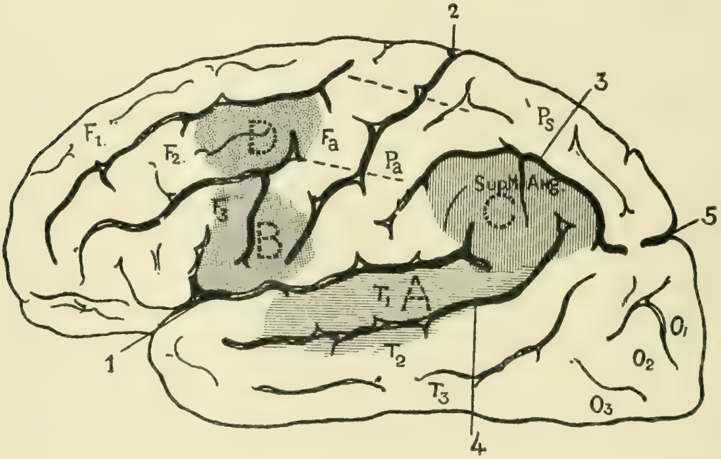

FIG. 2.

A, the posterior half or three-fourths of the left First Temporal Convolution, is the Auditory Speech-Centre, in which are stored the auditory speech-images. B, the Broca's Convolution, is the centre for the motor memories of speech. C, the Angular and the Supra-Marginal Convolutions, is the centre for the visual images of written and printed speech. D, the posterior extremity of the Second Frontal Convolution, is the graphic-motor centre, in which are stored the motor memories which guide the right hand in the act of writing.

If, in the following manner (Fig. 3), we detach the four centres from their connexions, and represent them as circles, we shall be better able to indicate the relations of the four to each other, and also their relations to incoming and outgoing speech.

The exceedingly intimate relations of A and B have already been commented upon: they are indicated by the connecting line and the two arrows. Without detailed discussion of the relations of A and B with C and D, it may, I think, be said that all the connexions indicated by the lines of the diagram probably exist between them; and that along these lines the influences may travel, as indicated by the arrows, either in the one direction or in the other. What particular images are revived by the acts of Silent Thinking, Speaking, Reading, and Writing, I have already indicated in a former paper.

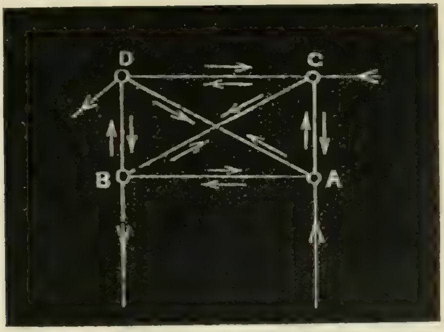

FIG. 3.

With such a diagram as Fig. 3 before us, it is an interesting exercise to consider how the diagram would have to be modified, if we wished to represent the speech-centres—(1), in an educated Blind person, who can read by touch; and (2), in an educated Deaf-Mute, who has been trained by the "lip-reading method" to converse, and who can read and write.

For representation of the centres in the Blind person, we should have to leave out the centre C, and substitute for it another centre in which are stored the Tactile word-images or memories revived by the blind in reading.[1] For representation of the centres in the educated Deaf-Mute, we should have to leave out the centre A, and place alongside of C, in the visual area of the cortex, another centre for the visual memories of lip reading.

A fact of great practical importance in relation to the speech centres is, that in the brain they are all situated within the territory supplied by the middle cerebral artery. This fact is made evident by Duret's well-known diagram, which I now reproduce (Fig. 4). In this diagram, the fissure of Sylvius is shown opened up, so as to display the Middle Cerebral or Sylvian Artery in all its length, and to show how the various convolutions surrounding the Sylvian fissure are supplied by branches of this artery.

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[1] According to the results of recent investigation, tactile sensation seems to have a double representation in the brain, partly in the motor convolutions, and partly in the limbic lobe (gyrus fornicatus). See V. Horsley, in the *Nineteenth Century*, June 1891.

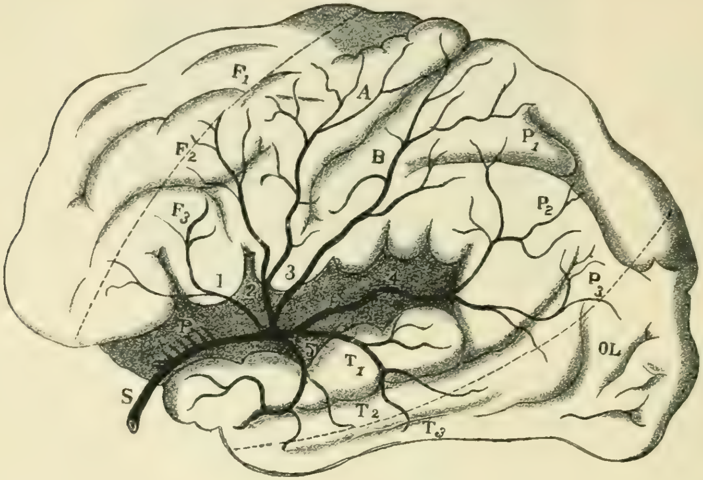

Fig. 4. (After Duret.)

It will be observed that one branch is supplied to the posterior extremity of the third frontal convolution, another to the posterior extremity of the second frontal, another to the posterior half of the first temporal convolution, and others to the supra-marginal and angular convolutions. All four speech-centres are thus within the area supplied by this artery.

It is no part of my intention to describe the various forms of organic disease that, by disabling or destroying one or more of the speech-centres, may give rise to aphasia. But I may say, in few words, that among the more important of such diseases are,—(1.) Necrotic softening, produced by the occlusion of the Sylvian artery or one of its branches. (2.) Apoplexy; which may either destroy a speech-centre by invading it, or disable it by exercising pressure upon it. (3.) Inflammatory conditions, such as Cerebritis, with or without suppuration; or, more rarely, Meningitis, with involvement of the subjacent grey matter in the inflammation. (4.) Tumours; which may either destroy a speech-centre by invading it, or disable it by producing pressure upon it. (5.) Traumatic conditions, such as fracture of the skull. Occurring over one of the speech-centres, a fracture sometimes causes disablement of it by the compression of depressed bone or extravasated blood, and sometimes destroys it by inciting in it inflammation that leads to abscess or softening.

For the analytical study of aphasia, it is best to take cases in which one speech-centre alone is affected, and in which the functions of the brain as a whole are not impaired, either by general pressure or by general inflammation. Most of the cases that fulfil these conditions are produced either by occlusion of a branch of the Sylvian artery or by a limited traumatism.

(*To be continued.*)

Part Second.

REVIEWS.

An Introduction to the Study of Diseases of the Skin. By P. H. PYE-SMITH, M.D., F.R.S., F.R.C.P. Lond., and Physician to Guy's Hospital. London: J. & A. Churchill: 1893.

"THIS handbook," states Dr Pye-Smith in his preface, "is a reprint, with some variations and additions, of the chapters dealing with diseases of the skin which he wrote in 1886, to complete the unfinished work on medicine left by his late colleague, Dr Hilton Fagge." Many readers will welcome this neat and unpretentious volume in its present form. We have read it with renewed interest, admiring its scholarly tone, the way in which in few words the history of the various ailments is elucidated, and the apt quotations from classical, medical, and lay writers scattered throughout its pages. One cannot, however, help feeling that Dr Pye-Smith might have done himself more justice had he recast entirely some portions of the book which are behind date, and had he at the same time, by some pruning off and excision of repetitions, made room for new material, which he could have easily incorporated with the old.

In the scheme of the treatise, various forms of classification are instanced as possible,—such as the pathological and etiological, the therapeutic, or affections regarded from a subjective point of view, or again as affecting certain layers, organs, or regions, or finally as they occur at different ages. It is clear that none of these can be exhaustive, while the therapeutic must be misleading, as there are but few specifics in the treatment of skin diseases, and even these few are not of universal applicability. The arrangement adopted—that of families and alliances of disorders—has, in common with all methods of classification, some drawbacks, though at the same time offering a degree of suggestiveness while exhibiting some heterogeneous elements. Thus, under the common inflammatory diseases, scabies is associated with eczema, and ringworm is included among affections of the hair-sacs and cutaneous glands.

A feature of the book, on which its author very properly lays some stress, is the care which has been taken to formulate the localization of many of the dermatoses, and in accordance with this the volume is copiously illustrated with diagrams tinted in such a manner as to display the relative topography of numerous varieties. This is a matter to which attention has not previously been so graphically or pointedly directed. It is both interesting in itself, and may be found a valuable aid in diagnosis. The least satisfactory is that in the section on syphilis, where, surely through a printer's error, the locality of the lesions *par excellence* is indicated by a deeply-coloured blotch over the insertion of the deltoid on the left arm, while the most frequently offending organ is immaculate.

Under the head of eczema, to which naturally the largest space is devoted of any of the diseases, some sensible remarks are made on the supposed danger of driving in an eruption, a topic to which of recent years regard has again been paid. The author observes that in little children, however ill, one may again and again notice that as soon as cutaneous exudation is checked and the irritation subsides, their general health begins to mend. The only caution he would give is to be very careful to ascertain the condition of the heart, the arteries, and the kidneys in aged persons suffering from eczema, lest the treatment or cure of their cutaneous disease should be credited with the fatal result, which is really the consequence of degenerated viscera. As to diet in eczema, he says—and we agree with him—that there does not appear to be any evidence that the moderate use of malt liquors or wine (with food) does harm in eczema, or in any other affection of the skin, except in cases where, independently of dermatitis, even moderate stimulants provoke dyspepsia, with flushing of the face. We would only add that of all varieties of malt liquors, the light German beers have seemed best borne in eczema. He notes, too, with respect to aperients, that the Hunyadi Janos water, which he deservedly praises, appears, as a rule, to agree better with women than with men. The advantage as a sedative and hypnotic which chloral possesses in the case of children over opiates, and of henbane over both in those of advanced age, is well put. At the same time the value of codeia in the elderly as well as in the young is not alluded to, though it is indisputable. The indications for arsenic in eczema, and the reservations under which it is to be employed, are laid down with much care and precision, and will be perused with profit, inasmuch as arsenic is still too indiscriminately ordered.

It is more than doubtful if satisfaction will be general as to the opinion expressed that the pityriasis pilaris of Devergie is nothing more than lichen pilaris. Whatever the ultimate decision may be as regards its nosological position, it is quite certain that the conditions are distinct.

Occasionally throughout the volume what seem contradictory statements are made. One of the most noticeable of these occurs with reference to the origin of pityriasis rubra or exfoliative dermatitis, and thus it appears difficult to reconcile the views enunciated by the author on page 113, where it is pronounced not to arise from the general diffusion of an eczema, with that on the following one, where it is said that it may. Erythema, again, is made to include a large number of affections which, though they have features in common, yet should, we think in some instances at least, be described separately. Thus herpes labialis and progenitalis do not fit in well with erythema multiforme, and surely dermatitis herpetiformis is something more than a mere variety, to say nothing of its being far more cursorily dealt with than its merits deserve. Urticaria in its various forms, though an allied disease, is surely not a simple phase of erythema.

A short but excellent account of sycosis is given. The contagiousness of the coccogenic form is admitted, but the treatment advised is, in our opinion, too briefly stated, and not wholly satisfactory. When it is affirmed that sudamina never occur on the face, this, we think, must be taken with some reserve, unless Robinson and Hyde are wrong in asserting that the vesicles found on the faces of cooks and washerwomen are only persistent sudamina.

Dr Pye-Smith's experience of tinea tonsurans capitis as regards age is somewhat exceptional, for in one hundred consecutive cases no fewer than thirteen occurred in persons over fifteen years old. In another point, too, his experience differs from that of most,—viz., that chronic ringworm commonly produces a bald patch in the centre of the affected area, or even denudes the whole scalp of hairs, with exception of a few, which are thin, pale, scattered, and ill-developed. Thinning of the hair, and a weak growth in disseminate ringworm, is frequent enough, but definite baldness as a sequence is certainly rare. He prefers an ointment of pyrogallic acid to chrysarobin in the treatment, which is otherwise on the ordinary lines. He seems more than doubtful if favus, with which, indeed, he does not appear to be familiar, is ever cured, and the treatment indicated, occupying ten lines, would not enable any one to cure the disease.

Though aware of the observations of Robinson, subsequently in the main confirmed by Morris and Crocker, he does not accept the essential identity of xanthoma diabeticorum and ordinary xanthoma, and, indeed, states his belief that the relationship is probably only nominal. There is a good description of lupus, though too much room is occupied by an account of Bazin's scrofulides, a now antiquated topic, all interest in which other than historical has evaporated. The volume concludes with a small but well-selected appendix of formulæ.

On the whole, though we have adversely criticised some of the views expressed therein, there is, perhaps, no work on skin diseases which contains so much information in the same space.

A Medical Handbook for the Use of Practitioners and Students. By R. S. Aitchison, M.B., C.M., F.R.C.P.E., late Medical Officer Out-Patients' Department, Royal Infirmary, Edinburgh, etc. London: Charles Griffin & Co.: 1893.

This book is similar in size and binding to the surgical handbook of Cathcart and Caird,—that is to say, it is an exceedingly neat and handy little volume. The contents, again, have evidently been compiled with great assiduity and labour, for the book is mainly a compilation. Compilation, though it may not require the amount of observation or even the power of arrangement that an original work calls for, yet demands a very considerable knowledge of the subject beforehand. We are sorry to say that we are not able to praise Dr Aitchison's work. In the simpler parts of the work, in the descriptions of the cardiac murmurs, though a clearer description of compensation and its principles might have been given, in the account of the lung diseases the text, if not very fresh, is readable. Elsewhere, however, some lamentable blunders are made. Tetany is described as a variety of tetanus. One might almost catalogue it thus: Class I., nervous disorders; Order 3, convulsions; genus, tetanus; species, tetany; description, tetanus confined to the hands. Under the circumstances, our author should have gone further and divided his species into four,—the rheumatic, the convalescent, the variety following operations on the thyroid gland, and the fatal variety sometimes attendant on dilatation of the stomach. It would have been a healthy exercise to trace the connexion of these varieties with tetanus. Peripheral neuritis here signifies no more than the local varieties, such as the drunkard's arm. Alcoholic paraplegia is the only mention of alcoholic paralysis; and although this has been pointed out to be due to a peripheral affection affecting the spinal cord later, no mention is made of the fact. We are afraid that the text-books consulted must have been somewhat out of date.

Von Graefe's symptom in exophthalmic goitre is called Grave's, while Stellwag is Anglicised to Stellway, but these are minor points.

The urine tests are not carefully enough entered; very few of the fallacies are given, and some important corroborative tests missed out. We have said enough to show that considerable revision is necessary to bring the newest handbook in line with the latest text-books.

A book like this, which aims at teaching the student, should be judged by its defects rather than its merits.

The Treatment of Chlorosis by Iron and some other Drugs. By Ralph Stockman, M.D., F.R.C.P.E., *British Medical Journal*, April 29th and May 6th, 1893.

This paper is an able piece of destructive criticism. A perusal of it leaves only one clear impression in the mind, and that is, that inorganic iron salts form the proper treatment for chlorosis, but that how they act is at present beyond the wit of man to explain in a satisfactory manner. Dr Stockman reviews the three theories with regard to the action of iron,—the absorption, the stimulation, and what is now known as Bunge's theory, although this last was put forward by others before that eminent German physiologist drew attention to it.

The rest of the paper is occupied by a series of experiments designed to settle the matter, carried out on typical uncomplicated cases of chlorosis. On the supposition that iron, if injected subcutaneously, could not by any means stimulate the walls of the intestines or combine with the sulphuretted hydrogen there, he treated several cases in this method. Using the citrate of iron and sodium in ¼ to ½ gr. doses daily hypodermically, he obtained very good results. Iron given in this manner, he says, is stored up principally in the liver. It has, however, been nearly proved—as nearly as anything in this matter can be—that the intestinal epithelium has a great power of excreting iron from the blood, a power which the kidney does not possess to a like extent. Iron in the blood-stream has been shown to be poisonous. The intestinal epithelium is the safety-valve. May not much of the iron injected subcutaneously find its way into the intestinal tract almost at once, or at least be deposited in the epithelium?

Again, sulphide of iron is an iron salt which is fully saturated with sulphur. By introducing it intact into the intestinal canal, by administration in keratin capsules, Dr Stockman hoped to overcome that link in Bunge's theory in which the inorganic iron plays the part of a sponge, absorbing the sulphuretted hydrogen, and allowing the organic iron compounds to be made use of by the body. The patients recovered rapidly. But then there is no reason to suppose the ferrous sulphide remains unchanged in the small intestine in the presence of the acids of fermentation. Even then any action in the iron salt would probably liberate sulphuretted hydrogen at the same time. A point, we think, which militates very strongly against Bunge's theory is the fact that H_2S is really an infrequent gas in the intestinal canal, and no one, so far as we know, has proved that an excess is present in chlorosis. Another question is, if all animals are unable to form organic iron compounds from the inorganic salts of that metal, while members of the vegetable kingdom can do so,—for it is done by one or other,—a dividing line between the two kingdoms has been found, unless the lower animals have a power which the higher do not possess.

The only rational conclusion is, that inorganic iron salts are absorbed from the intestinal tract either in small or in considerable quantities, that the excess is got rid of by the intestinal epithelium, and that the chemical reflex of these cells is very delicate, and allows only a very small, but a sufficient percentage of iron to circulate in the blood. Organic iron salts must be complicated in structure, and probably somewhat stubborn in their resistance to disintegration, and are therefore not so easily absorbed as their inorganic allies. The affinity of iron for albumen, indeed, may cause combinations of the active inorganic iron salts with the chemical contents of the cells of the intestinal wall, which may prevent absorption in anything like excess.

Report of a Committee appointed by the Clinical Society of London to Investigate the Periods of Incubation and Contagiousness of certain Infectious Diseases. Supplement to Vol. XXV. London: Longmans, Green, & Co.: 1892.

THE collective investigation of disease always sounds very attractive theoretically. Its performances and results have, however, seldom succeeded to the extent which its promoters have wished or hoped for. It is truly remarkable how few can be got to say only yea or nay to the simplest question. The report of the above committee is useful chiefly in a negative sense. The subject which they investigated is of the greatest interest and importance. The results point out the extreme variations which occur in almost all the infectious disorders.

To take up the diseases in their order, 87 cases of diphtheria were analyzed. The incubation stage lasted from one to fourteen days; but excluding doubtful cases, of which there were many, two days was the general rule, seldom extending to seven days. The disease was infective throughout.

Typhoid fever, 80 cases; incubation twelve to fourteen days up to three weeks; infective throughout. Infection retained by fomites for at least two months.

Influenza, 75 cases; incubation from a few hours to four or five days; infective from onset until a week or ten days after commencement.

Measles, 127 cases; incubation generally fourteen days; now and then more, up to eighteen. Infectious throughout attack. Fomites probably retain infection for a short time.

Mumps, 136 cases; incubation three weeks; infectious from prodromal stage until three weeks after.

Rubeola, 108 cases; incubation more than two and less than three weeks; infective for two or three days before the rash has appeared, and for a week after.

Scarlet fever, 134 cases; incubation from twenty-four to seventy-two hours; rarely up to eight days. Infective until the close of desquamation.

Smallpox, 114 cases; incubation generally twelve days; quarantine should last fifteen days; infective until scabs are all off.

Varicella, 36 cases; incubation fourteen days; infective during rash.

Other points of interest are noted in the report, as the infection by fomites and during convalescence.

The Structures in the Mesosalpinx: their Normal and Pathological Anatomy. By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E., and J. D. Williams, M.D., B.Sc. Edinburgh: Oliver & Boyd: 1893.

The prominence which, through abdominal surgery, the mesosalpinx has of recent years acquired, makes welcome all works which aim at elucidating the histology of this important part, and establishing the pathogenesis of the numerous cysts and other growths arising between its layers. Especially is this the case when such investigations are conducted with the care, labour, and ability which have been bestowed on the above work.

The specimens examined consisted of ninety-four pairs of broad ligaments from adults varying in age from 17 to 76 years, five pairs from children between the ages of 3 and 15, and eleven from fœtuses and new-born infants.

The description of the histology of the structures, besides being fuller and more exact than that of any British work on the subject with which we are acquainted, corroborates the results arrived at by foreign investigators, and at the same time introduces a number of original observations. The comparative anatomy of the Fallopian tubes and of the organ of Rosenmüller in early life, during sexual activity, and in old age, is instructive and interesting. The presence of a constricting neck of the tube near its outer end, and resembling a sphincter, is here demonstrated for the first time. Under the head of Pathology a unique case of primary tubercle, with congenital absence of the outer two-thirds of the tube, is described; while one of cancer of the tube, with co-existing disease of the ovary and cervix, teaches operators the necessity of examining the tubes and ovaries when removing the uterus for cancer. Investigation of the cysts of the mesosalpinx justifies the authors in drawing the following important conclusions, viz.,—That papillary and non-papillary cystomata are developed in the mesosalpinx; that the former are common, and usually originate in mesonephric relics, and as their contents reproduce the papillary change elsewhere, the danger of tapping is very evident.

The Science and Practice of Midwifery. By W. S. Playfair, M.D., LL.D. Eighth Edition. London: Smith, Elder, & Co.: 1893.

The author of this well-known and justly popular text-book is to be congratulated upon the appearance of the eighth edition of his work. The distinguishing feature of this edition is the complete revision that certain chapters have undergone at the hands of the author. Turning to that dealing with the recently revived operation of symphysiotomy, we find evident signs of a complete acquaintance with the most recent literature of the subject, and a carefully weighed opinion with regard to its merits and probable sphere of usefulness. It is unnecessary to say that in its present form this text-book will prove as great a favourite as ever.

A Treatise on Gynæcology. By S. POZZI, M.D., Professor in the Faculty of Medicine (Paris). Vol. II. London: The New Sydenham Society: 1893.

THE second volume of the translated edition of this popular French treatise on Gynæcology is now in the hands of the members of the New Sydenham Society. It deals with cancer and displacements of the uterus, stenosis and hypertrophy of the cervix, the disorders of menstruation, and inflammation of the uterine appendages. With regard to the last-named condition we notice with satisfaction that the author gives a guarded opinion with regard to the value and advisability of the treatment by vaginal hysterectomy so warmly advocated by Péan and his followers. Upon the debatable question of the use of pessaries in the treatment of anteversion, Pozzi recommends what he calls "indifferent pessaries" (such as the ring). By the way, a misprint occurs on page 116 ("forceps" should read "pessaries"); otherwise the volume under consideration is remarkably free from typographical errors.

A Practical Text-Book of the Diseases of Women. By ARTHUR H. N. LEWERS, M.D. Lond. Fourth Edition. London: H. K. Lewis: 1893.

DR LEWERS'S text-book on Gynæcology has quickly passed from the third to the fourth edition,—so quickly, indeed, that little alteration has been necessary to bring it up to date. Some of the illustrative cases have their later history detailed, especially those in which there was supra-vaginal amputation of the cervix for cancer. The author might with advantage have added a chapter on genital tuberculosis, a condition which recent researches (especially those of Whitridge Williams) prove to be far from uncommon.

Outlines of the Diseases of Women. By JOHN PHILLIPS, M.A., M.D. (Cantab), etc. London: Charles Griffin & Co.: 1893.

THIS work is intended for the use of the student and junior practitioner. It contains a great deal of information in a very condensed form; and whilst on this account it cannot take the place of the larger text-books, such as Skene's and Pozzi's, it will form a useful manual for the student refreshing his memory before entering for examination in gynæcology. We cannot agree with the author as to the expediency of leaving out the consideration of the more important operative procedures which the junior practitioner ought, at any rate, to be acquainted with, even if it is unlikely that he will ever put them into practice. There ought, for instance, to be something more than the bare mention of such an operation as hysteropexy for prolapsus and retroflexion of the uterus. The value of the work is increased by the numerous sketch-diagrams, some of which are highly ingenious. We think the author is right in giving only a list of contributions in the English language; a complete bibliography of Continental papers on the various subjects would be out of place in a work like this.

Foncionnement de la Maison d'Accouchements Baudelocque. By G. Lepage. Paris: G. Steinheil: 1893.

Dr Lepage's work is the Hospital Report of the Baudelocque Clinic for the year 1892, and it contains a great quantity of carefully compiled statistics concerning the confinements occurring in that institution. A significant sign of the times is found in the statement that craniotomy was only once employed (upon a dead fœtus), whilst symphysiotomy was carried out in thirteen cases, and ischio-pubiotomy (the operation of Farabeuf) in one. The maternal mortality for the year was ·49 per cent.; the cause of death was,—septicæmia after abortion outside the hospital (two cases), puerperal septicæmia (two cases), heart disease (one case), erysipelas of the face (one case), rupture of the uterus outside the hospital (one case), and typhoid fever (one case). The work contains much that will interest obstetricians in this country, and the author deserves credit for his laborious undertaking.

Traitement Chirurgical des Affections Inflammatoires et Néoplastiques de l'utérus et de ses Annexes. Par E. Doyen. Second Edition. Paris: Bureaux des *Archives Provinciales de Chirurgie*: 1893.

Professor Doyen in the above work endeavours to demonstrate the superior advantages of vaginal hysterectomy over laparotomy in pelvic suppuration, and for tumours of the uterus and its annexa. His operation (total castration) goes further even than that of Péan (uterine castration) in the direction in which few British or German gynæcologists will care to follow him, and we must say that we fail to see any necessity for the great mutilation entailed by such surgical methods. Whilst we disagree with the author as regards his operative procedures, we must accord to him all credit for the lucid way in which he has put his results before the profession.

New Review of Tuberculosis (*Revue de la Tuberculose.* Paris: G. Masson.)

The French Committee which inaugurated the Congress for the Discussion of Tuberculosis and the publication of the *Etudes* *expérimentales et cliniques sur les Tuberculoses* have made a new departure in the issue of a *Revue de la Tuberculose.*

The Review, of which the first number appeared on April 15, is to be published once in three months under the direction of an editorial committee similar to that which organised the earlier work, Prof. Verneuil remaining chairman. The quarterly periodical replaces the *Etudes,* which have been issued at irregular intervals. The first number contains original articles and critical *résumés* of recent work on tuberculosis. The original articles are three:—

(1.) Straus discusses the histological development of tubercle. He sets aside the view which connects it directly with extravasation of leucocytes (Metschnikoff and others), and indicates his adhesion to the teaching of Baumgarten, Ziegler, and Cornil, who trace the formation of tubercle to proliferation of the fixed cells of the part invaded. The latter view is reported as corroborated by a research on experimentally induced tuberculosis conducted by Kostenitch and Wolkow in the Pasteur Institute and in Straus's laboratory. Those observers have endeavoured to show by experiment that extravasated leucocytes are incapable of progressive development, undergoing gradually a process of disintegration. Giant cells result, in their opinion, from a fusion of several epithelioid cells, which become enveloped in an albuminous exudation. Straus, following Prudden and Hodenpyl, believes that dead tubercle bacilli introduced into the veins of animals are capable of inducing tubercle identical with that produced by living bacilli, and maintains that the tuberculosis thus induced passes through the recognised stages, including caseation, and that in such artificial tubercle the tubercle bacillus can be discovered and stained after the method of Ehrlich or of Ziehl.

(2.) Lejars commences a discussion of tuberculosis of *bursæ serosæ.* The subject is continued to the next number.

(3.) Petit communicates a biographical sketch of Villemin, which claims rightly for the recently deceased *savant* the distinguished place of being the precursor of Koch in relation to the specificity of tuberculosis. The article is unnecessarily tinctured by indications of national self-consciousness and jealousy.

The critical *résumés* include the analysis of recent papers on tubercular disease—pathological, clinical, and therapeutic. To this is appended a convenient bibliographical index of recent work in the department.

The new Review is a valuable contribution from members of the French School to a vastly important question of international interest. The school has been most honourably associated with the subject in the past, and this recent undertaking forms an interesting link between present endeavour and the labours of Villemin, of Laennec, and of Louis.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXII.—MEETING VIII.

Wednesday, 3rd *May* 1893.—Mr JOSEPH BELL, *President*, *in the Chair*.

I. ELECTION OF MEMBERS.

1. The following gentlemen were elected Ordinary Members of the Society:—D. W. Johnston, F.R.C.S. Ed., 34 Woodburn Terrace; Henry A. Peddie, M.B., C.M., 24 Palmerston Place; Frank Ashby Elkins, M.B., C.M., Royal Asylum, Morningside; John Wheeler Dowden, M.B., C.M., Lynn House, Gillsland Road.

2. Sir Joseph Lister was elected an Honorary Member of the Society.

II. EXHIBITION OF PATIENT.

Mr Caird showed a PATIENT, a young man, who in January 1890 was operated upon for appendicitis. A collection of fœtid pus was found. The cavity was washed out and drained, and healing resulted. There was a slight hernia remaining, which, however, caused no inconvenience.

III. EXHIBITION OF SPECIMENS.

1. *Mr David Wallace* showed—(*a*.) THE GALL-BLADDER, etc., removed post-mortem from a case of cholecystotomy. The patient was a man of 56. For two months he had had marked jaundice, without any definite history of gall-stones or stomach trouble. Nothing of the nature of a tumour could be felt other than a smooth fluctuating swelling in the position of the gall-bladder. This was cut down upon. It was found to be a distended gall-bladder. It was aspirated, and twenty or thirty ounces of fluid drawn off. After a portion of the gall-bladder had been brought out at the wound, to enable an opening to be afterwards easily made and a large drainage-tube to be inserted, the peritoneum over it was stitched to that lining the abdominal wall. The patient, for thirty-six hours, did not have a bad symptom. Then he suddenly began to bleed profusely from the interior of the gall-bladder. He became collapsed, and died four hours after the hæmorrhage began. At the post-mortem nothing was found that could account for the jaundice. All the ducts were much distended, and the walls of the gall-bladder were very thick. The liver substance showed only slight fatty change. Complete union had taken place between the peritoneal surface of the gall-bladder and that of the abdominal wall. Mr Wallace remarked that it was recognised that in cholecystotomy, if there was jaundice

of long standing, the risk of hæmorrhage was much greater than in cases in which there was no jaundice, or jaundice of only short duration, and that the mortality in such cases was very high.

(*b*.) A TUBERCULAR KIDNEY from a case of nephrectomy. The patient was a woman of 26. She had frequency of micturition, and a large quantity of pus in her urine. After a month pain developed in the region of the right kidney, which organ a few weeks later could be palpated. As the patient was rapidly losing ground, it was resolved to cut down upon the kidney. The kidney was found to be much enlarged, and soft on the surface, but after two large abscesses had been evacuated it was sufficiently reduced in size to be easily excised. The condition proved to be tubercular. Unfortunately the patient died from shock ten hours after the operation. The lumbar incision was used.

2. *Dr James* showed the KIDNEYS and BLADDER from a case of pyonephrosis. The patient was a middle-aged man, who had been under treatment in his ward in the Royal Infirmary. He had suffered for some time from pain in the back and frequency of micturition, and had copious pus in his urine, which was ammoniacal. Once or twice there was some blood in the urine. He had from time to time shiverings and sweatings. There was a distinct tumour in the right loin, varying in size inversely with the amount of pus in the urine. There were no distinct symptoms of calculus. The patient would not hear of operation, and died a few months after leaving the Infirmary. It was found that there were two ureters to each kidney. The right kidney was tremendously sacculated. The upper ureter of the right kidney was greatly distended, and at the lower end there was a large stone. The lower ureter was not much distended. Both ureters of the left kidney were somewhat dilated. Though they blended near their lower end, yet there were two distinct openings into the bladder. He thought that the comparative absence of symptoms of renal calculus might be due to the fact that there was a double ureter. If so, the pain in renal colic was probably due really to damming back of urine. In reply to the President, Dr James stated that the patient had not congenital phimosis.

3. *Mr Alexis Thomson* showed a SPECIMEN FROM CASE OF FATAL PERFORATIVE APPENDICITIS in a child of 5½. The patient was a remarkably precocious boy, of delicate build and constitution. On the father's side there was a marked history of tubercle. At the age of eighteen months he had an attack of colic, vomiting, and constipation, which lasted five days. He was running about quite well until the present illness. On the 5th February 1893 he was suddenly seized with pain in the belly, and sickness. On the 6th he was given certain purgative pills, which caused three separate fluid evacuations; nevertheless the pain in the belly became worse, and he vomited everything he swallowed. On the

7th there were all the signs of general peritonitis. On the 11th he became somewhat collapsed, and the vomiting was that of complete obstruction,—*i.e.*, repeated and sudden gushes of greenish-brown watery fluid from the mouth and nose. In the evening the abdomen was opened in the middle line; purulent fluid of fæcal odour escaped from peritoneal cavity; the coils of small intestine within reach were equally distended and matted together with recent purulent lymph. One coil was brought to the surface, opened, and washed out. No improvement followed, and he died the following day (the 12th), at 3 P.M., of asphyxia from the inhalation of vomited fluid. The sectio showed that, excepting the bowels, the viscera were healthy, without a trace of tubercle. The small intestine was distended, the coils matted together, with minute collections of pus between adjacent loops. This purulent matting, from being almost absent in the gastric and splenic regions, became more and more pronounced as the region of the cæcum was approached. The cæcum was exposed with difficulty; the appendix was found enlarged, gangrenous, and bathed in pus; it showed three perforations—two on the convexity, the third on the concavity; corresponding to and projecting from each aperture was a small ovoid concretion of a brownish-grey colour. The true nature of this case was not suspected. Tubercular peritonitis was the diagnosis adopted.

4. *Dr James Ritchie* showed a specimen of PERFORATED VERMIFORM APPENDIX. There were some points of peculiarity about the case. Patient was 69 years of age. The symptoms of appendicitis were not well marked. The bowels had moved freely two days previously, and also on the morning of the perforation. The patient was just recovering from an attack of hepatic colic, and had passed gall-stones. One morning severe pain suddenly returned, but lower down than before. The nurse, believing that it was a recurrence of hepatic colic, gave morphia subcutaneously. When seen she was suffering from shock, and it was evident that there was a perforation somewhere in the abdomen, causing acute general peritonitis. At the post-mortem it was found that there was a perforated vermiform appendix, and that the gall-stones had nothing to do with the illness.

5. *Mr Caird* showed some DRAWINGS and SPECIMENS illustrating INTESTINAL SURGERY. One of the latter was an injected preparation from a case of malignant disease of the ilio-cæcal valve. The whole cæcum, with adjacent piece of ileum, was removed, and an anastomosis formed. The patient was now doing well, after fourteen days.

IV. ORIGINAL COMMUNICATIONS.

1. *Dr Affleck* read his paper on OBSERVATIONS UPON DISEASE OF THE APPENDIX VERMIFORMIS AND ITS RESULTS, which appears at page 97 of this Journal.

2. *Mr John Duncan* read his paper on THE OPERATION FOR INFLAMMATION OF THE APPENDIX VERMIFORMIS, which appears at page 110 of this Journal.

The President said he was sure they had had two model papers describing this interesting and dangerous malady from the different points of view of the physician and surgeon. His own experience had agreed very thoroughly with the statements in the papers. What struck him most was Mr Duncan's classification of the varieties of appendicitis. That classification had been well illustrated in the last four cases which he himself had had. One case occurred in a child of 11. It was a pretty chronic one, and a large abscess formed. On cutting down, pus was easily obtained. Two wounds had to be made to allow of proper drainage. The patient did very well. The second occurred in an adult. There was diffuse peritonitis. The abdomen was freely opened, and pus was found. The peritoneal cavity was washed out, and left well open, a point which he believed to be of great importance, and the patient made a rapid recovery. In the third case, also an acute one, a grape-stone was found in the centre of a concretion. The fourth was a chronic relapsing one. The patient would not allow of operation.

Mr Cathcart said there were two points he wished to refer to. The first was that he believed that appendicitis in some cases was tubercular. Several years ago he had had a case in a young man which he believed to be primarily one of tubercular peritonitis with suppuration. After a long illness, the patient seemed to get quite well. A short time afterwards, however, he was suddenly seized with intense abdominal pain, which, from its position, pointed to "perityphlitis." Only palliative treatment was adopted, and the patient died two days afterwards. At the post-mortem the peritoneal cavity was found to be full of pus. The appendix was ruptured, but its mucous membrane was merely swollen, and had greyish-yellow points over it. There were no concretions. He believed that the condition was tubercular. The second point was that he thought that "perityphlitis" might sometimes arise apart from the appendix, from a catarrh or ulceration in the cæcum, accompanied by inflammation around it. In support of this view he referred to a case he had had with ordinary symptoms of typhlitis in a young lady. The patient got worse, and it was thought advisable to operate. A small localized collection of non-purulent brownish fluid was found around the cæcum, while the appendix was healthy. It did not seem necessary to interfere with it. The cavity was drained, and the patient made a good recovery.

Dr Andrew Balfour said he had had three cases lately, all of which had yielded to treatment by opium internally and copious enemata of olive oil.

Mr Caird said there were various points of great interest in the papers. He would like to have had more information from Mr

Duncan especially, as to his experience of the after-history of such cases, and also of those cases which ended in recovery with the after-establishment of a fæcal fistula. As to his own experience, he had had some twenty-five cases, with ten operations. Of the cases operated upon only one recovered. Twenty-two of the cases had been in males. Half of the number were in children. The ages of the patients had varied from 3 to 60. With regard to diagnosis, he had noticed that there was very frequently a history of a former attack, with pain in the region of the appendix. The patient often gave a history of a traumatism,—*e.g.*, a strain in lifting, or a blow. There was also often a history of some food having been taken which had disagreed, such as raw apples, stewed meat with carrots, etc. He knew a patient who had a relapse of vermiform appendix mischief every time he ate veal pie or apple. If the cases were seen early the difficulty of diagnosis was often pronounced, owing to the curious distribution of the pain. The pain might be in the vicinity of the navel, and similar to the pain in strangulated hernia. He remembered two cases in which the pain was referred to the left side of the abdomen. But even in these cases the main tenderness was always over the vermiform appendix. As to the treatment in very early or mild cases, it might be left to the physician to decide whether it was better to use opium or to give purgatives. In severe cases it was often difficult to decide when to operate. He thought one was justified in operating if the pulse rose to 120. Temperature was of little value as an indication for operation. If there was obstruction and no flatus passing, or if there was a small quantity of flatus passing and yet patient was getting no relief, operation was called for. Dulness on percussion could not be relied upon to indicate the presence of pus. In some cases there was no fluctuation or local œdema. The facial expression of the patient was, he thought, of great importance. It changed very rapidly. The patient might be looking very well, and in an hour afterwards might have that characteristic expression of the face that told one that a very severe type of peritonitis was going on. The nose was pinched, the eyes sunk in, and circles appeared below the eyes. It was important, however, that the patient should be absolutely at rest and not speaking. When spoken to he usually brightened up, and the peculiar expression disappeared. This characteristic facial expression was, he thought, of greater value than anything else in helping one to come to a diagnosis. In some cases, when the patient was very bad, he apparently rallied, with the presence of a smart diarrhœa. The stools were typhoid-looking, and tremendously offensive. He never saw a patient recover who had this. The symptoms seemed to indicate that a local change had taken place in the vicinity of the inflamed appendix. Pus had burst into the abdominal cavity, or into the colon, local tension came to an end, and a peristalsis occurred. In every instance the patient afterwards rapidly collapsed. When about to operate the anæsthetic had to be administered with the greatest care. Vomiting was often more troublesome than in strangulated hernia. Previous washing out of the stomach would not save the patient from the danger, as material gushed up from below the stomach. He had seen two cases in which the patient was suffocated on the table by vomited matter getting into the trachea. After opening the cavity, it was to be remembered that if they washed out they might drive pus into the remote cavities of the peritoneum. If they were certain that the cavity was cut off it was better simply to sponge it out and dust it with iodoform. It was important to do as little as possible to avoid breaking down adhesions. In such cases the less they did to the appendix the better. It was best to leave it *in situ*. After the operation there was still an anxious time. The patient might succumb from shock, or he might get over the condition of shock and go on very well for a day or two, and then suddenly drop back dead. He had had two cases of this kind. It was interesting to know that the perforation in the majority of instances was in the base of the vermiform appendix. He had seen it once or twice at the apex. The appendix was often completely cut across at its base, and found lying loose in the cavity. In these cases, if one simply drained and left the appendix behind it did no harm. This fact, he thought, suggested a method of treatment which might be used in cases in which there were constant relapses. In such cases one was warranted in advising operation for removal of the appendix. There was, no doubt, an element of risk, but the patient in such cases was in as favourable a position as the patient upon whom the gynæcologist operated for salpingitis. Nevertheless, as good results were not obtained, a hole was often torn in the colon in the course of the operation. He thought that in such cases, when the appendix could not be readily taken away, they might instead put on a double ligature near the base and cut between. The patients would probably not be troubled again when the appendix was thus cut off from the cæcum. After recovery with spontaneous opening of an abscess, a fæcal fistula often remained for years. When the fistula was retro-peritoneal, perhaps the best thing to do was to trephine through the ilium, and so get good drainage. When the fistula was anterior, probably the best treatment was to cut out a piece of the gut and perform an anastomosis. The operation was no doubt a dangerous one, but it was better on the whole to risk it than to let the patient continue the miserable life that the existence of an anterior fistula implied.

Dr Leith said that he had devoted some attention to the subject of the causation of appendicitis, mainly from the anatomical side. He had examined a large number of bodies in the post-mortem room, especially with regard to the position of the vermiform in relation to the cæcum and its peritoneal reflections. He had tried to find out how a kink could take place. By cutting out the cæcum, tying it below, and injecting from the ileum, he was always able to inject the appendix, but in no case to make it kink. He thought that if kinking took place it must be brought about by vermicular movement of the intestines, unless the vermiform itself was capable of vermicular movement. The whole of the arterial supply of the appendix came through its peritoneal reflection, and was very abundant. Appendicitis was probably not due to deficiency of primary blood-supply. The relations of the peritoneum to the appendix were very intricate. In some cases the cæcum was not covered by peritoneum behind. With regard to tuberculosis as a cause of appendicitis, statistics had been compiled which showed that tubercular ulceration was more common in the vermiform appendix than in any other part of the alimentary canal. He was satisfied that a catarrhal condition was very common, and probably as a result of previous attacks of this the lumen of the appendix was in some cases very small. It was specially apt to be constricted where the peritoneal reflection ended, about the middle of the organ. He had not in any case found a foreign body in the appendix. It was rarely empty, however, usually containing some mucus.

Prof. Struthers, referring to Dr Leith's remarks, said that the cæcum always had peritoneum all round; at least he had always found it so. He had long been in the habit of pointing out the error of describing the cæcum as usually destitute of peritoneal covering behind, an error still to be found in some standard books on anatomy, such as Quain's *Anatomy*. Any variety in this respect that he had seen was in the opposite direction, that of the peritoneum covering not only the whole of the cæcum proper, but also extending up behind on part of the colon. The error is probably owing to a loose application of the term cæcum. With regard to the circulation of the appendix, it had not the free anastomosis that there was along the rest of the gut. He thought that it was of importance to remember that the appendix, like the cæcum, was freely provided with lymphoid follicles. Notwithstanding, from the wide view of comparative anatomy and development, he had abandoned the old teleology of his student days, and regarded the appendix vermiformis as a vestige.

Dr Leith said he was willing to show specimens to corroborate his statements as to the occasional absence of peritoneum behind the cæcum.

The President said that the question had been asked if the appendix had a vermicular action. He had lately read in an American journal of a long one which had shown very active wriggling movements after removal, and delivered itself of a small concretion.[1]

Dr William Russell said that some years ago he took part in a discussion on the subject of appendicitis in the pathological section of the British Medical Association. At that time he tended to the view that there must be some vascular cause for the disease. He took the opportunity, when pathologist at the Royal Infirmary, of examining a considerable number of appendices with a view to ascertain the frequency of the occurrence of scybalous concretions, which were so commonly regarded as the cause of appendicitis, and he found that in a very considerable number of perfectly normal appendices they were present. They had been regarded as foreign bodies, and were often spoken of as "cherry stones." He had never found any other foreign bodies in the appendix. He thought that these facts weakened the contention that the condition was due to the presence of these scybalous masses. It was contended at that same meeting that organisms were the cause of the disease. Organisms, of course, caused all that class of morbid condition, but it was necessary to have something preceding the organism. There had to be some local injury. He would be glad if the anatomists would further work out this subject, and ascertain whether certain conditions of distention of the cæcum, with perhaps a tacking down of part of the appendix, did not lead to strangulation of the vessels supplying part of the structure. Dr Leith in doing his experiments had cut out the cæcum. That, however, was not the kind of thing they wanted. They wanted the observations made with the parts *in situ*. The subject, to him, at present was excessively obscure. He did not understand why at the base of an appendix a little gangrenous ulcer should form. In his experience this was one of the commonest lesions in the appendix. Complete necrosis of the organ was on the whole more easy to explain. With regard to Mr Caird's suggestion as to leaving the appendix *in situ* in certain cases after cutting it off from the cæcum, he had had a case bearing upon the point, and one which made him think it would be dangerous to do so. The case was one of intestinal ulceration, in which the opening between the appendix and the cæcum was entirely obliterated by an old scar. In that case the appendix, was enlarged and swollen, its coats thickened and inflamed, and its lumen filled with muco-pus. It would certainly have been a source of great danger to the patient had he not died of something else.

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[1] *Case of Dr Parker Syms*: "After its removal it continued for almost ten minutes to squirm on the plate very much as a grub worm might do, and finally a formed fæcal movement took place from it."—*New York Medical Journal*, 1893.

Dr Norman Walker spoke of his own experience of the illness under discussion. He wished to know what dose of opium Dr Affleck recommended in order to subdue the pain. In his own case an enormous amount of opium was required for this purpose. Another point to which Dr Affleck had not referred was the management of the bowels. One plan was to keep them confined, but this was exceedingly disagreeable to the patient. A remarkable point was the long time the patient felt ill after suffering from perityphlitis. It was more than a year after his illness before he felt able for a day's work. He had been struck with the enormous number of cases of this kind in America in which operation was undertaken without any very great necessity.

Dr Affleck, in replying, said that the discussion had naturally taken chiefly the surgical direction. He wished to explain that he had only said they did not know the uses of the appendix. He would not say it was a useless organ, as Prof. Struthers had seemed to credit him with maintaining. It was not for him to say that any part of the human body was useless. He still adhered to what he merely threw out as a conjecture, that there must be something inherent in this organ which rendered it so vulnerable. He held that there was no one cause, but many causes of appendicitis. They acted upon an organ inherently feeble. He thought that concretions did play an important part in the causation of the disease. In a large number of cases that were operated upon they were found, but he could not go the length of Talamon in saying that they were the cause in almost all cases. He was unable to give a reason why the pain should be most severe in the morning, but certainly it had been so in many of his cases. He had often noticed that the patients said they awoke with the pain. He gave opium in considerable quantity and in frequent doses until the pain was really allayed. He could not state any exact amount. He believed that keeping the bowels quiet was an important measure. He had lately seen a case in which general peritonitis was, he thought, set up by the giving of a large enema. Violent pain immediately followed the injection. He delayed giving an enema as long as possible. Many of these cases, however, had regular action of the bowels every day.

Mr Duncan, in replying, said that he wished to bring two very short analogies to the notice of Dr Russell and Mr Caird. Dr Russell had a difficulty about the ulcerations at the base of the appendix in some of these cases. They occurred both at the base and at the point. Was there not an analogy here to the condition in strangulated hernia? In several of the cases the appendix was considerably swollen, but constricted at the base. Inflammation having taken place, it strangulated itself, as it were, and at the point of strangulation ulceration was prone to occur, as in hernia. The other analogy was in regard to leaving a portion of the appendix. The same argument as Dr Russell used struck him forcibly. It was dangerous to leave it with septic organisms about it. He had once had an abdominal operation at which a big kidney was shelled out. The ureter was obstructed at the bladder, and there was a difficulty in knowing what to do with it. It was removed, with the exception of an inch above the bladder, washed out, and stitched up. It healed by first intention, but afterwards an abscess formed in the stump and gave considerable trouble. He merely mentioned this case as an analogy. He advised that the appendix should always be taken away.

Mr Caird explained that he had advised cutting the appendix across, and leaving it only in cases in which it could not be taken away.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LIV.—MEETING VII.

Wednesday, 14th June 1893.—Prof. A. R. Simpson, *President, in the Chair.*

I. *Dr J. W. Ballantyne* showed—(*a.*) A water-colour drawing of a mesial sagittal section of a MACERATED MALE FŒTUS that had been handed to him for examination by Dr A. T. Sloan. The labour occurred on February 27th, 1893. When Dr Sloan arrived at the case he found a hand protruding from the mother's vagina and the shoulder impacted in the pelvis, which was smaller than normal. He noted that the child was dead and macerated, and that its parts were soft, and so, although he did not succeed in pushing up the prolapsed arm, he managed to get hold of the other arm, and by traction drew the fœtus from the maternal passages, the head being, he thinks, deeply flexed on the chest. The infant appeared as if it had been dead for about a fortnight. The epidermis was absent everywhere save on the palms of the hands, the soles of the feet, the thighs, and the upper arms. Save in these situations, therefore, the red skin was exposed to view. In length the infant measured 55 cms., and the trunk alone measured 40 cms. The sagittal mesial section revealed the following changes characteristic of intra-uterine death:—Antero-posterior flattening of head and trunk, vertical elongation of head, presence of sanguinolent fluid in pericardium, and infiltration of the subcutaneous tissue with the same kind of fluid, diffluent state of brain, and considerable blood-stained effusion under the scalp. There was also great lateral deviation of the spine in the upper dorsal region.

(*b.*) Ten water-colour drawings of various sections of a LARGE STILL-BORN MALE INFANT, for which he was also indebted to Dr A. T. Sloan. The mother had had three children in the country, all large and well developed, but all still-born. In her fourth pregnancy she came to Edinburgh to be under the care of Dr Sloan. Labour supervened on April 6th, 1893,—according to the woman's reckoning, three weeks after the full term. There was some delay from the large size of the infant, and the use of forceps was necessary to deliver the child, which was still-born, and could not be resuscitated, although attempts were made for a long time. The placenta was normal; so was the mother's pelvis. Dr Sloan had sent the infant to him for dissection, in the hope of discovering the cause of the repeated still-births. The infant was so well developed and so mature in appearance that it resembled more a baby of several months than a new-born child. Its weight was 4780 grammes; the length from vertex to heel was 56 cms., and from vertex to symphysis pubis 36·5 cms. The circumference of the head in the O.F. plane was 38·5 cms., in the O.M. 42·5 cms., and in the s.O.B. 37 cms. The circumference of the trunk round the shoulders was 43·5 cms., at the level of the nipples 36 cms., at that of the ensiform cartilage 40 cms., at that of the umbilicus 37 cms., and at a level an inch above the last named 39 cms. The thigh measured 19 cms. in girth, the leg 13·5 cms., the upper arm 13 cms., and the forearm 11·5 cms. The infant was therefore a large one; but its size alone was not such as to prevent its safe passage through a normal pelvis. The head, however, when viewed from above, was seen to be more nearly square than ovoid in shape, and on closer examination it was found that the anterior fontanelle was scarcely larger than a threepenny piece, and that all the bones were unusually well ossified and nearly immovable at the sutures, but the occiput felt loose in its attachments. The infant was put in the freezing mixture, and sections were then made of it,—one mesial sagittal in the region of the head, and nine horizontal at various levels in the trunk. It was found that some hæmorrhage had taken place into the falx cerebri and tentorium, and that the upper part of the occiput was separated from the basilar part and from the occipitals and displaced inwards. There had been a fracture of the bone at the so-called "cartilaginous hinge," which was in this case ossified. The vertebral canal contained a large quantity of blood, which surrounded the spinal cord in its entire extent. The foramen ovale was nearly closed. The transverse sections showed that all the organs were well developed and normal. The bladder was distended with urine, and bulged downwards in front of the symphysis pubis. Dr Ballantyne had no doubt that the still-birth was due to the premature ossification of the head, and to the fracture of the occiput which had resulted from it. He had advised that in any future pregnancy that might occur labour should be induced at the eighth month, in order, if possible, to avoid the above results and secure the birth of a living infant.

(*c.*) A FEMALE FŒTUS WITH RETROFLEXION OF THE VERTEBRAL COLUMN AND SPINA BIFIDA, which had been given to him for dissection by Dr W. N. Elder, who had also kindly furnished him with the following clinical details:—The mother was a woman of small stature, 31 years of age, who had enjoyed good health all her life. She was married when 25 years old, and fifteen months afterwards (May 8th, 1883) was delivered of her first child, a female. The presentation was a footling, and presented no exceptional difficulty. The infant had a spina bifida, the tumour being the size of a small orange, and situated between the last dorsal and the first lumbar vertebra. On May 2nd, 1887, she was delivered of a boy, and on August 31st, 1889, she had a second boy; both these children are still alive, and are healthy and well formed. In her fourth pregnancy, of which the specimen shown was the result, labour pains came on on July 21st, 1892. Dr Elder saw her on the morning of the 22nd, and found the cervix fully dilated, the membranes unruptured but very tense, and the abdomen much distended and as tight as a drum. A foot presented. The membranes were ruptured, and then a great discharge of liquor amnii took place (from 6 to 8 quarts). After some trouble the child was delivered by traction, the difficulty being caused by the great size of the head compared with the smallness of the limbs, which were also so delicate as to cause apprehension lest they should part from the trunk. The mother made a good recovery; the infant was still-born. With regard to family history, the mother's mother twice gave birth to twins, she being the younger of the second two. The father was a healthy man, and his mother had once had twins. The infant, a female, measured 30 cms. in length, and 19 cms. from vertex to coccyx. The circumference of the head in the O.F. plane was 31 cms., and in the O.M. 34 cms. The face had a natural appearance, and there were numerous hairs on the scalp, but the whole head was sharply flexed backwards on the trunk, so that the occiput came into close relation with the open spinal canal in the lumbar region. There was no indication of a neck anteriorly, the skin passing directly from the chin to the thorax. There was no umbilical hernia, but the abdomen was very prominent. A sagittal mesial frozen section of the infant was made, when it was seen that the spine ran upwards and forwards towards the centre of the fœtal mass. Several of the dorsal and lumbar vertebræ were absent. The abdominal organs, especially the liver, were pressed downwards and forwards.

(*d.*) A sagittal section of an INIENCEPHALIC FEMALE FŒTUS, which had come into his possession some time ago, but of which he had never, unfortunately, obtained the clinical history. Its length was 23 cms., that of the body alone being 14 cms. The head and trunk formed a single rounded body, measuring from 12 to 13 cms. in its antero-posterior diameters. The head was sharply flexed backwards, so that the skin covering its posterior surface was directly continuous with that lying over the coccyx. The occiput was, as in the previous specimen, defective in its lower part. The spine showed a much smaller number of vertebral bodies than is normal, and had an upward and forward direction passing through the centre of the fused head and trunk mass. The face looked directly upwards. The thoracic and abdominal viscera were displaced downwards and forwards, but there was no exomphalos. This specimen, along with the previous one, illustrated very well the manner in which such a monstrosity was developed, the successive stages being in all probability spina bifida, retroflexion of the head, and adhesion of the occipital part of the head to the region of the sacral or coccygeal spine.

(*e.*) A drawing of a TUBO-OVARIAN CYST AND OVARIAN CONCRETIONS, which Dr J. D. Williams (Dowlais) and he had examined some time ago. The specimen was obtained from the post-mortem room of the Infirmary, where it was taken from the body of a woman, 50 years of age, a widow, who had died of septicæmia after the excision of the left breast for cancer. She had never been pregnant, and her menstrual flow had always been scanty and accompanied by pain, which disappeared two days after the flow came on. She had mitral and tricuspid incompetence, and there were abundant signs of chronic pelvic peritonitis. The uterus was bound by adhesions to the rectum, sigmoid flexure, and posterior pelvic wall, so that there was no pouch of Douglas; it was also adherent to the bladder. The cervix uteri was conical in form, with a pin-hole os. The left Fallopian tube was much atrophied; its outer end was dilated to form a bean-sized hydrosalpinx, which was situated amidst a cluster of pea-sized cysts placed at the outer end of the left ovary, and both tube and ovary were covered by numerous adhesions binding them to the sigmoid flexure. The left ovary, which was small, contained a bony nodule in its posterior border. The right Fallopian tube, like its fellow of the opposite side, was very thin and atrophic; it ended externally in an enlargement, which was found to consist in part of the dilated tube, and in part of a marble-sized ovarian cyst; this was the tubo-ovarian cyst, and it measured 1·2 cm. in diameter, and contained limpid fluid. The tube and ovary were covered with membranous adhesions, and the inner third of the tube was glued to the posterior bladder wall. Two marble-sized cysts were found in the ovary growing from the hilum, with one of which the dilated end of the tube was continuous. This cyst arose from the paroophoron, and a probe could be passed from it into the end of the Fallopian tube for a short distance. The tubal fimbriæ did not project into the cyst cavity, but were blended with its walls, and the tubal folds were seen flattened out on the interior of the cyst lying near the tube. The lining membrane of the cyst was not smooth, but was covered with numerous papillary projections. No ciliated cells were seen, but there were round or irregular cells, not columnar or cubical. Muscle fibres were found in the wall of the cyst lying next the tube, but not in the outer portion. At each end of the ovary, and lying in its substance, was a hard smooth nodule about the size of a pea, in structure resembling bone. A similar nodule was found in the broad ligament immediately below the ovary. These bodies differed in several particulars from the ovarian concretions described by Mackenzie (*Trans. Path. Soc. Lond.*, vol. xl. p. 198). This specimen seemed to be one of so-called tubo-ovarian cyst, and not of ovarian hydrocele; and both Dr Williams and he thought it was due to the absorption of intervening tissue, the wall of the hydrosalpinx and that of the ovarian cyst having been kept in close contact by peritoneal adhesions. The condition on the left side was interesting, and seemed to support the above conclusion.

II. *Dr Matheson Cullen* showed a specimen of PLACENTAL DISEASE. The placenta was from a ii.-para, who was delivered of a dead child at the eighth month. The maternal surface was entirely white, and gave one an impression as if it had been completely covered with lard. The fœtus had apparently been dead for some weeks, and was in a macerated condition, and no dissection of it was allowed. The mother had enjoyed the best of health during the course of the pregnancy, and the labour was rapid and easy. After her last confinement she was laid up for some time with symptoms suggestive of endometritis; there was no history or suspicion of syphilis. Whether the condition was anterior to or consequent upon the death of the fœtus it was impossible to say. A microscopic examination would be made which might further elucidate the case.

III. *Dr Felkin* showed—(*a.*) AN INDIA-RUBBER BALL, 3½ inches in diameter, which was almost filled with 5¾ lbs. of shot. He used the ball in the treatment of chronic constipation, anæmia, and obesity, and he found it much more convenient than either the celluloid ball or the canvas ball, which were usually employed for the purpose. The ball was instructed to be rolled from right to left round the abdomen for five or ten minutes night and morning. One of his patients had lost 10 inches in girth after five months' regular use of it. A rather smaller ball, with a less quantity of shot, he found very useful in inducing a regular action of the bowels in young girls who so frequently suffer from habitual constipation; this plan obviated the need for constant dosing.

(*b.*) A photograph of a case of ACCIDENTAL VACCINATION in an unusual position, namely, on the knee. He vaccinated a girl, G. F., who was aged 9, on the 14th February last. She only took slightly, but seven days thereafter a very well-marked vaccine vesicle appeared upon the knee. Her sister, aged 7, who was vaccinated at the same time, did not take, but she also had a fairly well-marked vaccine vesicle upon the thigh. Dr Felkin had had two other cases of accidental vaccination. He vaccinated Mrs S.'s child on the 2nd of February, and on the 13th he found that she herself had a well-marked vesicle situated just over the pisiform bone on the right wrist. A neighbour's child, C. L., aged 14, had likewise been inoculated on the right eyelid.

IV. *Dr J. Stuart Nairne* read his paper entitled TWO CASES OF TUBO-OVARIAN CYSTS, which will appear in a future number of this Journal.

The President expressed the gratification of the Society in seeing Dr Stuart Nairne at their meeting, and hearing him describe such interesting cases. So far as he (the President) could judge from the history of the patients and the appearance of the preparations, he was disposed to think that they were both cases of pyosalpinx. The first case was more difficult to analyze; but when a tube had got largely distended with pus, and inflammatory action was set up around, it was quite possible for the ovary to become flattened out and embedded among the adhesions. As to the treatment, Dr Nairne was to be congratulated on the success of the measures he had adopted; and the greater success of the first case showed the importance in such conditions of removing so much of the sexual organs as to prevent the further recurrence of menstrual changes. This was usually obtained by removal of the appendages of both sides. But removal of the uterus gave this result, and he would like to know if any of the Fellows had carried out the procedure suggested by Péan, and advocated by some of his fellow-countrymen, of digging out the uterus through the vaginal roof, and so getting access to pelvic abscesses as to drain and cure them.

Dr J. W. Ballantyne thought that if the microscopic examination showed that one part of the sac was distinctly tubal and the other distinctly ovarian in structure, the nature of the cyst would be settled. The specimen he had shown demonstrated at least one mode of origin of tubo-ovarian cysts.

Dr Nairne replied.

V. *Dr Berry Hart* read his paper on a CASE OF EXTRA-UTERINE EXTRA-PERITONEAL GESTATION OPERATED ON AT THE FOURTH MONTH.

The President said there certainly were cases where there was no good reason to doubt that a tubal gestation sac had burst at about the second month, and the patient had recovered. There was room, therefore, sometimes for expectant treatment; but he agreed with Dr Hart in thinking that in cases where there had been indications of hæmorrhage, and still the sac continued to grow, the best chance of safety for the patient lay in operative treatment.

Dr Barbour congratulated Dr Hart on his successful case. It showed also the difficulty of diagnosing cases of early extra-uterine gestation even on careful examination under chloroform.

Dr Kynoch, Dundee, said he had listened with much pleasure to Dr Hart's paper. He should like to ask Dr Hart if he would advocate operative interference in cases of extra-uterine extra-peritoneal gestation at an earlier stage of development than the one he had described? Last year he saw such a case. The woman, aged 22, had been married three years, and had never been pregnant. Menstruation had always been regular, but she had missed the last two periods. When he saw her she complained of agonizing pain in the right iliac region, which she stated had come on when lifting a pail of water. She had a similar attack of pain on same side, but much less severe, a week previously (which, she stated, came on immediately after coitus). On examination he found both breasts contained milk. There was a slight hæmorrhagic vaginal discharge, and a soft tumour bulging into the vagina on the right side, and pushing the uterus to the left. There was a distinct swelling, dull on percussion, extending about 2½ inches upwards above Poupart's ligament on the right side. Believing it to be a case of extra-uterine gestation (about ten weeks) which had ruptured into the folds of the broad ligament, and as the patient's condition did not indicate operative interference, she was ordered an opiate and kept quiet in bed. Five days afterwards she had another severe attack of pain on the same side, and was now distinctly collapsed-looking. Fearing secondary intra-peritoneal rupture, and before deciding to operate, he asked Dr Smart of Liverpool (who was north on holiday) to see the case with him. By this time, however, the patient had again so reacted that they decided to postpone operative interference. The expectant plan of treatment was continued, and beyond some bladder and rectal trouble the patient continued to improve, and in four weeks was attending to her household duties. Five months afterwards no trace of tumour; she was perfectly well, and had menstruated every month. (The difficulty was to decide *at the time* the cause of the collapse with the second attack of pain, whether merely further rupture between the folds of the broad ligament, or secondary intra-peritoneal rupture.)

Dr James Ritchie said that he supposed each case must be treated on its own merits; that every case of extra-uterine gestation which was continuing to develop was on the brink of serious danger, but that those cases which ceased to grow might recover without interference. Many years ago he had a patient about whose pregnancy there could be no doubt, because not only of the arrest of the menses, but because of the severity of morning sickness and other symptoms, which always previously had made the patient aware of pregnancy. Between the second and third month this patient was seized with sudden severe pain in the lower part of abdomen at right side. She was collapsed, and on examination there was a tumour at the right side of uterus. Extra-uterine gestation with rupture into right broad ligament was diagnosed. After a period of great anxiety the symptoms began to subside, the swelling decreased very slowly, and after some months no trace could be discovered. The patient made a complete recovery, and has remained well since.

Dr Hart replied.

VI. *The President* communicated the following paper on PROTRACTED GESTATION, by *Dr G. Paget Blake*:—

A. R. has always been very regular, both before and since marriage. She is now 25, and has been married nearly two years, during which time she has had two miscarriages, each at the end of the third month. She ought to have menstruated on October 20th, as the catamenia appeared previously on September 22nd, lasting then the usual time, and it was during their continuance that the husband left home on business matters for (as he had intended) six weeks. He was able, however, to return unexpectedly by a night train on October 15th.

The expected "period" (viz., October 20th) passed by, and she concluded that she was again *enceinte*, and she very shortly had all the ordinary symptoms of morning sickness, etc. I advised her to be unusually quiet, and to take as much rest as possible in the recumbent posture during the third and fourth months, to avoid the bad habit of aborting which she was likely to get into at that special time. She followed my advice, and all went on well, so that I calculated she ought to have been confined on July 22nd, which would have been 280 days exactly from the early morning of October 16th, reckoning it, therefore, as one day.

Now comes one of the remarkable circumstances of this unusually remarkable case. At this very date there was an abundant secretion of milk, which ran away so freely that both breasts had to be most carefully protected day and night.

She continued to increase in size till August 3rd, when labour apparently commenced. She had strong regular pains, and everything betokened a speedy delivery. But this proved a false alarm, though the pains lasted, off and on, for three days, when they gradually subsided, and on August 6th they ceased entirely. Here, again, is a remarkable event in this peculiar case. She continued to get about and to increase in size until September 5th, when the child, an unusually large one, was born, after a perfectly normal labour, very early in the morning, about 2 A.M.

This gives 323 days; much the longest period, I think, on record. Dr Montgomery relates a case of 291 days well vouched for, but, as far as I can ascertain, this case is without a parallel.

Another remarkable feature about this is, the lady was a triplet, the eldest of three girls,—the second being still alive, unmarried; the third, equally large and well formed as the other two, died shortly after birth.

VII. *Dr J. C. Webster* communicated the following paper on NOTES OF A CASE OF EXTRA-UTERINE GESTATION, by *Dr Fred. Mann*:—

Mrs W., æt. 36 years, married twelve years ago, residing in Ashton-under-Lyne; v.-para, including this last pregnancy; youngest four years old; no miscarriages. Patient considers herself a healthy person as far as her sexual history is concerned. First seen by me on August 7th, 1892, on which day she had a great deal of pain in the abdomen, with severe vomiting. On inspecting the abdomen there was a swelling on the right side in the iliac region. Several possibilities occurred to my mind, the predominant ones being typhlitis or obstruction. The vomiting and pain were relieved by an effervescing draught of hydrocyanic acid and a morphia suppository. The next day she stated that the tumour had been there for about a couple of months, that it was growing rapidly bigger, that she had had pain several times on that side, that she had missed four periods, and that the date of the last menstruation was about the beginning of April 1892. She also stated that about the middle of June 1892 she had what she calls a "fainting fit." She did not think it necessary to send for a doctor, as she had suffered in a similar manner before—meaning faints—though this time she had to remain in bed a couple of days, after which she went about her household duties as usual. On examining her P. V. I found a tense fluctuating tumour on the right side, which was painful on pressure, and apparently connected with the uterus. The uterus was pushed over to the left side, somewhat enlarged, and erect. The cervix was neither hard nor soft like that of pregnancy, though pulsations could be felt in the vagina. I came to the conclusion it was an ectopic gestation. On the 9th she had labour-like pains, and showed me a "clot" which she had passed. On examining, it was the decidua; thus making the diagnosis doubly sure that here we had an ectopic gestation of about four months' duration. Having obtained her consent to operate, I did so the next day, the 10th August, with the assistance of Mr Aspinal and the district nurse. I chose the vaginal operation.

Chloroform being administered and the patient put in the lithotomy position by means of a Clover's crutch, I made an incision about an inch and a half long, laterally, into the vaginal wall. The bleeding was brisk, but easily arrested by torsion of all the vessels. No ligatures were used at all. Separating the cellular tissue I came upon what I took to be peritoneum, but it turned out to be the sac of the fœtus. Opening into this there was a rush of a dirty substance, prune juice in colour, along with fœtal bones. I passed my index finger into the sac, separated and removed the placenta. The reason of my removing the placenta was that after I had separated a small portion of it little or no bleeding occurred.

The cavity was washed out with a one per cent. solution of carbolic. I also ascertained that my operation had been entirely extra-peritoneal, not being able to get my finger into the peritoneal cavity. The cavity was packed with iodoform gauze for forty-eight hours, after which I administered a two per cent. carbolic douche every day, and passed my finger daily into the cavity to keep the vaginal mucous membrane from healing. The recovery was uninterrupted; the temperature never above normal. The cavity was completely closed in four weeks' time. The placenta, fœtal structures, and decidua were sent to Dr Webster for examination.

I should also state that the patient is again pregnant for the sixth time, the pregnancy being of about three months' duration.

Part Fourth.

PERISCOPE.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P. Ed., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, and on Midwifery and Gynæcology, School of Medicine, Edinburgh.

Craniotomy upon the Living Fœtus is not Justifiable.—Under the above title Dr Cornelius Kollock pleads for the abolition of craniotomy upon the living fœtus. He examines the records of the modern Cæsarean section, and relates a case in which he sucessfully performed this operation upon a patient whose previous infants had always been sacrificed by the craniotomist; and comes to the conclusion that 85 or 90 per cent. of the cases of obstruction of the pelvis forbidding the delivery of the fœtus in the natural way might be saved by a timely resort to Cæsarean section. He very rightly asks,—"Are we to hold to the barbarous, murderous practice of craniotomy because of its antiquity? Are we to allow conservatism to drift us into criminal old fogyism?" In the same number of the *New York Journal of Gynæcology* in which Dr Kollock's paper is published appears an editorial, entitled "The Turning of the Tide," in which the foregoing communication is highly commended; and the writer closes with the sentence, "Fœticide must always be, whatever the ignorance or love of expediency of our lawgivers may call it, nothing else than *unjustifiable homicide*, in lieu of an uglier name."—*New York Journal of Gynæcology and Obstetrics*, January 1893.

Indian Obstetrics in Central America.—Dr P. M. Jones of Yuscaran, Honduras, describes in a very graphic manner a native labour scene. "Picture to yourself," he says, "a house about twelve feet square, with walls of stick plastered with mud, dirt floor, and thatched roof, all inside covered with a more or less thick layer of soot, grass, and dirt, the accumulations of the months or years that have elapsed since the 'house' was built. No window, and but one door, which is always tightly shut during the confinement,—though whether to keep out the air or to keep in the varied collection of nauseous smells I have not yet been able to find out. On three sides of the room are boards supported by wooden frames, and on one of these luxurious beds, or more often upon the floor, is the temporary 'lerain,' her only article of attire being a cloth twisted up into a cord and tied as tightly around her body, just above the abdominal tumour, as the midwife is capable of pulling it. Sitting or standing about the room are from five to twenty women, interested spectators, smoking and talking, and occasionally squeezing the patient's abdomen in order to expedite matters. . . . The only light comes from a tallow candle, slightly reinforced, if it be in the day time, by a few straggling rays that creep in through the cracks in the roof and around the door, and seem lost in the prevailing atmosphere of smoke and a combination of smells that beggars description. Presently there is an unusually loud howl from the victim, a gush of the escaping waters, followed during the same or the next pain by the advent of the child, who now sets up his wail, which adds a little to the weirdness of the scene. A red-hot piece of iron is now produced from somewhere, and the cord burned through. Then the child is taken in hand, and immediately wrapped up in old rags, a small space only being left for air, and by means of which a most noxious mixture of oil and dirt is put into the poor helpless child's mouth. The mother lies quietly for a few moments, then the placenta is pulled out, she is wrapped up, dirt and all, and remains quiet for a day or so, after which she goes about her work as usual. The audience disperses, the mother and child are left alone in the darkened room with some old hag to look after them, and there is another Hondurarian in the world; generally his inheritance is illegitimacy and congenital syphilis, and both of these will in turn be handed down to the next generation, if the little one be fortunate or unfortunate enough to survive for more than a few years. The percentage of difficult, painful, and often fatal labours is, I am sure, much larger than in any city of the same size in the United States."—*Brooklyn Medical Journal*, February 1893.

TREATMENT OF INCOMPLETE ABORTION.—Dr Cheney writes a paper, and relates four cases, which all go to show that immediate *curettement* following incomplete abortion can be done with the best results, and also that its omission may cause serious trouble. The author therefore thinks it wiser to advocate the views of Mundé and his followers on this subject, and to adopt them in practice.—*Occidental Medical Times*, December 1892.

A CASE OF HÆMATOMA VULVÆ.—Dr Max Simon records a case of large hæmatoma of the vulva which occurred in a primipara a little more than an hour after the completion of a normal labour. Along with feelings of tenseness and acute pain, the patient became conscious of the presence of a tumour in the vulvar region on the left side. Dr Simon found, on examination, a swelling about the size of an infant's head occupying the left half of the vulva, covered with stretched skin of normal colour. During the night a tear took place in the covering of the hæmatoma, and in the morning the patient was anæsthetized and the cavity emptied of all its clots. It was then seen that the bleeding chiefly came from an artery near the clitoris. Deep stitches were passed, and the cavity plugged with iodoform gauze. The hæmatoma was probably due to pressure from the child's head in labour; but it is remarkable that there were no other injuries, such as perineal tear. —*Centralb. f. Gynäkologie*, No. 4, 1893.

A CASE OF HÆMATOMA VULVÆ ET VAGINÆ.—Dr M. Warszawski describes a case in some points similar to that just abstracted. The patient, a woman of 22 years of age, was brought into hospital suffering from acute anæmia. She had recently been confined without any difficulty, and eleven days afterwards all the signs of acute anæmia suddenly appeared, whilst at the same time a large tumour developed in the perineum and right labium majus. The swelling was opened, the blood-clots cleared out, and the cavity disinfected and plugged with iodoform gauze. Later, she again came into hospital with all the signs and symptoms of a morbus maculosus Werlhofii. She was treated with ergot and hydrochloric acid, and later with hydrochlorate of hydrastin, and made a good recovery. The cause of the hæmatoma was thus made clear.—*Centralb. für Gynäkologie*, No. 9, 1893.

A CASE OF SYMPHYSIOTOMY.—Dr A. Krassowsky performed symphysiotomy on a rachitic ii.-parous woman with a narrow pelvis (conjugata vera 7·5 cms.), who had in her first confinement been delivered by means of craniotomy. A vaginal tear occurred, which had to be stitched. Both mother and child were saved. This is the first case of symphysiotomy reported from Russia.—*Centralblatt für Gynäkologie*, No. 5, 1893.

VOMITING IN PREGNANCY.—Dr R. Frommel speaks favourably of the action of orexin (Phenyl-dihydra-quino-azoline) in cases of vomiting in pregnancy. In four cases in which he employed it the results were satisfactory.—*Centralb. f. Gynäkologie*, No. 16, 1893.

MATERNAL ECLAMPSIA AND INFANTILE ENCEPHALITIS.—In the report of an interesting case of eclampsia gravidarum, Dr W. Wilke states that the infant died some hours after birth from convulsions and asphyxia. It was cyanotic, showed some œdema of the lower limbs, and the section revealed encephalitis multiplex. The writer discusses the etiology of the infantile condition, and excludes such factors as traumatism during labour and fœtal disease (placenta, membranes, and liquor amnii were normal).—*Centralb. f. Gynäkologie*, No. 17, 1893.

SURGICAL PERISCOPE.

By KENNETH M. DOUGLAS, M.D., F.R.C.S. Edin.

NEPHRORRHAPHY FOR FLOATING KIDNEY.—Dr Tillmans has traced the further history of 12 patients in whom the operation was practised by him. He finds that 6 are still in good health, at periods varying from one to three years after the operation; 4 he regards as definitely cured; 2 have again experienced their old symptoms after six months; 1 died of tubercular disease about two months after treatment, and the kidney was found firmly fixed in place. Four other cases were not traced.—*Deut. Zeitsch. f. Chirurgie*, Bd. xxxiv. p. 627.

RESULTS OF 572 TRACHEOTOMIES IN DIPHTHERIA.—Dr Hasb reports 572 cases, with a mortality of 316 (55½ per cent.). The cases occurred during six years, and the months from November to March were those in which the mortality was greatest, the maximum being reached in March. The mortality proved highest in infants, and in children over 6 it again rises, being 59 per cent. after the tenth year. The fatal cases usually terminated during the first five days after operation; and if this period be passed, a fairly good prognosis can be given, though the danger of pneumonia at a later period must be kept in view as a cause of death.—*Ibid.*, Bd. xxxiv., Heft 6.

CASES OF CHOLECYSTOTOMY.—Dr Cabot reports 7 cases in which he has operated for gall-stones, and one in which he explored a case of malignant disease with some symptoms pointing to stone. In four instances the gall-bladder contained stones; in two of these there being also a second stone,—one in the cystic duct, one at the junction of the cystic and hepatic ducts. One case was of stone in the common duct, one of stone in the hepatic duct, and one where the bladder contained merely what appeared to be a disintegrated stone. In most of the cases the gall-bladder *was shrunken*, being distended only in one, a case in which four stones lay in the bladder; in another case an abscess had formed in and about the gall-bladder. Dr Cabot suggests two improvements in the operative method to overcome the difficulty experienced in dislodging stone from the narrow ducts. In a case where the calculus was impacted in the cystic duct, he found a wire loop passed beyond the calculus the readiest means of withdrawing it, the side of the loop next the stone being rough and sharp, so as to hold to it; in three cases he experienced difficulty in safely incising the duct over the stone so as to permit of its removal, and to obviate this a hook-shaped knife is suggested, with a blunt point, and the cutting edge on the inside of the hook. The instrument he found particularly useful in operating far under the liver, the point being rubbed through the wall of the duct down on to the stone; by slight traction on the hook one makes it cut its way out, and give space for the introduction of forceps to remove the stone.—*Boston Med. and Surg. Journal*, December 8, 1892.

PERSISTENT FISTULA AFTER NEPHRECTOMY.—At the French Surgical Congress, Dr Tuffier, in communicating his experience of the results obtained after renal operations, enters into the question of the causation of the suppuration frequently found to follow the operation of nephrectomy, and indicates how, in his opinion, it may be obviated. He found that 7 per cent. of his cases suffered from these temporary fistulæ, and attributes the occurrence to one of two conditions, viz.—(1), peri-renal fibrous thickening (sclerosis), which prevents obliteration of the cavity left after the kidney is taken away; and (2), inflammatory states of the ureter, with dilatation. The first source of trouble is due to too tardy intervention; the second is simply an extension of the renal condition, but, as a rule, after nephrectomy the ureter drains into the bladder, and does not empty itself into the wound; when, however, the tube has become dilated and tortuous, this accident may occur. In such cases a portion of the ureter should be resected, or, if more radical treatment is to be adopted, then M. Tuffier recommends, as an exceptional operative procedure, the separation and removal of the ureter right down to the bladder. In this case a very extensive incision is required, starting from the angle of the twelfth rib, and passing by the erector spinæ muscle and iliac crest to the deep inguinal ring. —*Ann. des Maladies Genito-Urinaires,* May 1893.

BLOODLESS AMPUTATION AT THE HIP-JOINT BY A NEW METHOD. —Professor Senn describes a new mode of procedure—a modification of the Fourneaux Jordan method—by which a very complete command of the divided vessels in both flaps is obtained. The first step in the operation is cutting down along the trochanter, and then cleaning and disarticulating the head and upper part of the femur, and protruding it from the wound so as to clear the shaft so far as may be desired. The upper free end of the bone being then thrust out beyond the wound, a very stout pair of hæmostatic forceps is inserted into the wound behind the femur, on a level with the normal level of the trochanter minor, and protruded under the skin behind the adductors, and about two inches below the ramus of the ischium. At this point it is cut down upon, and thrust through the skin; a piece of rubber tubing is grasped in the middle by the forceps and drawn through the wound. The tubing is cut in two, and one portion is used to contract the soft tissues in either segment of the limb (which is previously rendered bloodless); the ends of the tube employed to contract the posterior segment are crossed behind, and then carried forward so as to include the anterior segment also. The amputation is then performed by skin flaps (very anterior, if possible), and circular division of the muscles at the point on the femur to where the bone has been deprived of soft parts; the incision through the muscles should be slightly conical, with the apex of the cone upwards. The femoral vessels are then to be secured, and a second ligature applied half an inch higher up, round both artery and vein; other vessels are secured, and then, the posterior constriction being removed, a moist hot compress is applied for a short time to diminish parenchymatous oozing, after which further bleeding points are ligatured. The anterior flap is then similarly treated. Among other advantages, Professor Senn claims the following for the method:—(1.) The first incision is the same as von Langenbuhl's for resection of the hip-joint, though longer. (2.) Shock and bleeding are less than when this incision is made after the circular amputation, and the time occupied is less. (3.) Disarticulation is easier when one has the whole femur as a lever, and not the proximal end merely, as in the Fourneaux Jordan method.—*Chicago Clinical Review,* February 1893.

Unusual Condition in Strangulated Hernia.—Mr Marsh, in an interesting paper entitled "Notes on a Recent Series of Unusual Cases of Strangulated Hernia," records the case of a blacksmith, æt. 52, who had for many years had a reducible hernia, and who for some hours before admission to hospital suffered from symptoms of strangulation. On the sac being opened, "the neck was found tightly blocked by a distended cæcum, which had so compressed a loop of small intestine as to produce strangulation." "The cæcum was dislodged with considerable difficulty, and the strangled coil relieved. Whilst manipulating the cæcum the vermiform appendix was found to be thickened; . . . . it was therefore removed." On examination the appendix proved to be the seat of an ulcer which had perforated all coats but the peritoneal; there had never been any symptoms such as are usually associated with appendicitis. The interest of the case lay in the fact that an incarcerated hernia had caused a strangulated one. Other cases of unusual interest are reported in this paper.—*Birmingham Medical Review,* May 1893.

A Case of Pulmonectomy.—Mr Lousen (Hull) reports this interesting operation, performed on a married woman, aged 34, the subject of tubercular disease, limited apparently to the apex of the right lung. The case being deemed suitable for operation, an incision was made from mid-sternum along the second rib nearly to the anterior axillary fold. The second and third ribs were exposed, cleared of soft parts, and portions resected, from the costal cartilages to a point at the outer limit of the incision. The pleura was then pinched up and punctured by a trocar and canula, and through the latter sterilized air was slowly pumped into the pleural cavity. The lung having slowly and completely collapsed, the pleura was incised; and after breaking down of adhesions, the upper lobe was separated and the apex drawn into the wound. A large needle was used to transfix the lung tissue some way below the disease, and with strong silk the tissue was ligatured firmly in two segments, the diseased portion being then cut off. Iodoform was rubbed into the stump, the cavity sponged out, and the lung dropped back. There was no trouble with the respiration, and the only sources of annoyance during convalescence, which is now fairly established, were an attack of dry pleurisy on the opposite side, and at the end of the second week the development of a hæmothorax, with fever. A month after the operation a quantity of altered blood was discharged, and the hæmothorax gave place to an empyæma, which has persisted since, though at the time of reporting the discharge was extremely small in amount. The temperature, which before the operation was subject to considerable evening rises, has remained normal for a long time now. The patient has lately (May 2nd) improved rapidly both in appetite and flesh, and was prepared to go home. Mr Lousen remarks on the great ease with which living lung may be palpated, and the least induration or thickening detected.—*British Medical Journal,* June 3, 1893.

Part Fifth.

MEDICAL NEWS.

Royal Colleges of Physicians and Surgeons, Edinburgh.—The following Candidates passed their Final Examination for the Triple Qualification in Medicine and Surgery in July 1893, and were admitted L.R.C.P. & S.E. and L.F.P. & S.G.:—George Dunlop Robertson, Greenock; George Batchin Thompson, Edinburgh; Hugh Keith, Ceylon; Charles Arthur Courtney, Victoria; John Kilpatrick Brownlees, Ballymena; Charles Seymour Langley, County Cork; Aylmer Alexander Macfarlane, Madras; Tom Clegg, Oldham; William Cochrane Stevenson, Stirlingshire; Marsham à Beckett M'Carthy, Sydney; Charles William Julius Dunlop, County Down; Hubert Harold Marshall, Madras; Reginald Williams, Saxilby; Hugh Sanford Smith, Toronto; Patrick M'Elwaine, Cavan; Edward Berkeley Macdonald Atkins, Queenstown; William Henry Coupland, Liverpool; William M'Kenzie Morison, Stornoway; Arthur James Richards, Bangor; Arthur Britten Franey, Banbury; Francis Flude Thorne, Kent; Ronald Cadell Macdonald, Arbroath; Wilbert Edward Wilson, Jamaica; David Crichton, Edinburgh; Kadambini Ganguli, India; Walter Ernest Duckworth, India; John Noonan, County Cork; Harry Dugard Chapman, Staffordshire; Frederick Charles Foster, New Zealand; William Walker, Alford; Arthur John Cromwell, Durham; Cecil Grantley Hoysted, Richmond; and Octavius Studdert Maunsell, Tramore. Of 21 Candidates who entered for the respective divisions, 14 passed.

THE INTERNATIONAL MEDICAL CONGRESS.

The National Committee for Scotland, consisting of Prof. Grainger Stewart (Chairman), Prof. M'Call Anderson, Mr Joseph Bell, Mr G. A. Berry, Dr Byrom Bramwell, Dr A. Bruce, Mr John Duncan, Dr W. J. Fleming, Prof. T. R. Fraser, Prof. W. T. Gairdner, Prof. D. J. Hamilton, Prof. M. Hay, Dr P. M'Bride, Prof. W. M'Ewen, Sir Douglas Maclagan, Dr R. W. Philip, the Right Hon. J. A. Russell, Dr W. Russell, Prof. W. Rutherford, Prof. A. R. Simpson, Dr R. Stockman, Dr J. B. Tuke, Sir William Turner, and Dr G. A. Gibson (Secretary), have considered the arrangements for the forthcoming Congress in Rome from 24th September to 1st October, and resolved to publish such information as may be of use to those intending to take part in it.

The subscription of 25 lire (£1) may be paid on arrival in Rome, or may be remitted previously to the treasurer, Prof. Pagliani. In order to participate in the advantages offered by the various railway companies, intending members should obtain the following documents:—

1. Ticket of membership, which is required by the English railways.
2. Letter of invitation, required by the French railways.
3. Card of legitimisation, required by the Italian railways.

Ladies may obtain lady-members' tickets on payment of 10 lire (about 8s.).

On the English railways only members are allowed to travel at reduced fares, but on the French and Italian lines the ladies and children of members have equal advantages with them on showing cards of legitimisation. No reduction is made on the Swiss or German lines. Tours in Italy may be made at a reduction of 20 per cent. on the fares.

Travellers going direct may travel to Rome and back for single fare. The following are the ordinary single journey fares to Rome by the French and Italian lines:—

Route.	Class.						No. of Days Valid.
	First.			Second.			
	£	s.	d.	£	s.	d.	
Dieppe, Paris, Turin, Genoa, Pisa,	8	13	7	6	1	5	17
Dover, Calais, Paris, as above,	9	19	6	6	19	6	17
Dieppe, Paris, Marseilles, Genoa, Pisa,	10	1	6	7	0	0	30
Dover, Calais, Paris, as above,	11	6	3	7	18	0	...
Dieppe, Paris, Turin, Bologna, Florence,	9	5	9	6	10	0	17
Dover, Calais, Paris, Turin, Bologna,	10	11	3	7	7	9	17
Dieppe, Paris, Turin, Venice, Florence,	10	10	3	7	7	0	17
Dover, Calais, Paris, as above,	11	13	6	8	5	9	17
Dieppe, Paris, Turin, Milan, Florence,	9	9	0	6	12	6	17
Dover, Calais, Paris, as above,	10	11	9	7	10	3	17

Messrs Thomas Cook & Son will be glad to give all information as to the journey and accommodation, and they have arranged a specially conducted party. The inclusive fare will be—first class, £16, 10s.; second class, £13, 10s.[1] If with full board (three meals a day), consisting of meat breakfast, dinner, and plain tea, or plain breakfast, luncheon, and dinner, £3, 7s. 6d. extra. Apply to the chief office, Ludgate Circus, London, E.C.

Dr Lunn, editor of the *Review of the Churches*, has organized a "Co-operative Tour to Rome." Apply to 5 Endsleigh Gardens, London, N.W.

Messrs Anderson, Anderson, & Co. have arranged that the ocean steam yacht "Garonne" shall be despatched from Tilbury Dock on 12th September for a month's cruise, allowing passengers to attend the Congress. Apply to 5 Fenchurch Avenue, London, E.C.

A committee in Rome will take care of the arrangements as to accommodation.

STATISTICS OF 5866 CASES OF VACCINATION.

By Francis Cadell, F.R.C.S. Ed.

These cases occurred during a period extending from July 1886 to the end of 1891, and were entered in the register of the New Town Dispensary, Edinburgh.

Insusceptibility.—No case has occurred in which an infant has been found insusceptible to vaccination by the arm-to-arm method.

Repetitions.—61 cases required the vaccination to be repeated owing to want of success on the first occasion. Failure after vaccination with lymph preserved in tubes was found to be greatly more frequent than in vaccination with fresh lymph from the arm. After vaccination with preserved lymph, failure occurred on the first occasion 26 times out of 310 vaccinations, giving a percentage of 8·46. After the use of fresh lymph, failure on the first occasion only occurred 35 times out of a total of 5556, which gives an average of 6·30 per 1000. These facts show the importance of maintaining the efficiency of the large vaccination stations, where fresh lymph can be constantly used for vaccinating.

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[1] These rates apply to delegates only. Fares for friends will be quoted upon application.

Erysipelas.—Seven cases of this dangerous accident occurred, and in almost every case the dwelling-house of the family was found to be damp or otherwise unhealthy.

Suppuration of Lymphatic Glands.—This complication of vaccination also occurred seven times out of 5866 cases.

Syphilis.—There has been no case of syphilitic infection. An additional protection against the propagation of syphilis by vaccination would be to make the age-limit the same for Scotland as in England, where infants must be vaccinated before they are three months old. An infant which showed marked syphilitic symptoms at three months old might appear healthy before reaching the sixth month. In this way the risk of using tainted lymph is greater here than across the Border.

Deaths.—Two deaths resulted from the complications of vaccination,—one from erysipelas, the other from blood poisoning following the suppuration of a lymphatic gland in the axilla. Both deaths took place about three weeks after the operation.

Revaccinations.—Only 45 revaccinations were performed. The large proportion of these were on boys between the ages of 12 and 14, employed at the General Post Office. Among the labouring classes few come to the Dispensary to be revaccinated, and these only do so when compelled by the rules of their employers. It would be much to the advantage of the community were revaccination made compulsory.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.—The Third Annual Meeting of the American Electro-Therapeutic Association will be held in Chicago, September 12, 13, and 14, at Apollo Hall, Central Music Hall Block. Members of the Medical Profession interested in Electro-Therapeutics are cordially invited to attend.—AUGUSTIN H. GOELET, M.D., *President.*

DERMATOLOGY.—From a notice in our Advertisement sheet, it will be observed that Dr NORMAN WALKER, Assistant Physician to the Skin Department, Edinburgh Royal Infirmary, intends to conduct a Class, limited to twelve, in connexion with the Post-Graduate Course.

WE have received from DUNCAN, FLOCKHART, & CO., Edinburgh, a number of samples illustrative of some of their New Specialities, including—(*a.*) Chloroform of specific gravity 1·490, containing about 1 per cent. of alcohol. It is claimed for this preparation that it is practically unalterable, and not liable to decomposition. (*b.*) Flexible Gelatine Capsules, containing various drugs, some of these being intestinal capsules, called "Keratinoids." These are coated with a special preparation, which, like keratin, prevents the capsules being dissolved in the stomach, as they are only soluble in alkaline juices, and almost any drug may be obtained in such capsules. (*c.*) Plastic Pills and Perles. These resemble the well-known French Perles. The plastic pills are coated with gelatine, and contain their ingredients in a granular form, so they never become hard. (*d.*) Cachet Pills and Cachets. It gives us much pleasure to bring these preparations under the notice of the profession, feeling confident that they only require to be known to be largely used.

MESSRS ALLEN & HANBURYS, London, have sent us specimens of their "Granular Effervescent Preparations." These preparations consist of very small granules, of a uniform size, and consequently can be measured with ease and accuracy, and ensures the equal solubility of the drug. Each bottle has a hollow stopper which contains the proper minimum dose of the preparation. We can confidently recommend these preparations to the notice of our readers, feeling sure that the fine and uniform granulation will be regarded as a great improvement.

OBITUARY.

DEATH OF DR MILNE CHAPMAN OF INVERNESS.

MANY readers of this Journal will hear with regret of the premature death of Dr Milne Chapman at the age of 38. The second son of Mr Thomas Chapman of Edinburgh, he early turned his attention to medical study. Educated at the High School, he went, while still young and looking younger, to the University, and after a diligent undergraduate course he took the M.B. C.M. degrees in 1877 with first-class honours. After further study in Paris, Vienna, and Prague, he commenced practice in Edinburgh with high prospects of success. But seeing an opening in Inverness he took up the work of the late Dr Ross, devoting himself more especially to surgical work, with a marked leaning to operative gynecology. In all the literature of midwifery and gynecology he was an expert, and the pages of this Journal were for years enriched by periscope and reviews from his facile and diligent pen. On obtaining beds in the Inverness Infirmary he worked with zeal and success, both in surgery and operative gynecology. After two attacks of influenza his health, never very robust, began to fail, and last December he was advised to winter abroad, first at Las Palmas, and later at Madeira. Change of climate and rest, however, only postponed the fatal issue of his malady, and on June 30th he died at Madeira. A life of much promise is thus prematurely ended. Dr Chapman is survived by a widow, but he left no children. On July 14th his remains were interred in Tomnahurich Cemetery, Inverness, with military and masonic honours. The Highland Volunteer Artillery, of which the late Doctor was Surgeon-Captain, turned out in large numbers under Lieutenant-Colonel J. E. B. Baillie of Dochfour, and the brethren of St John's and St Mary's Lodges were also well represented.

Part First.

ORIGINAL COMMUNICATIONS.

I.—THE DISORDERS OF SPEECH.

By JOHN WYLLIE, M.D., F.R.C.P. Ed., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh; Lecturer on Medicine in the Edinburgh School.

(*Continued from page* 155.)

APHASIA IN RELATION TO ORGANIC DISEASES OF THE BRAIN—*Continued.*

I NOW proceed to take up *seriatim* the consideration of each of the forms of Aphasia. In doing so, I shall follow the same order as was adopted in treating of the Hallucinations of Speech. I shall take first the centre A, in which are stored the auditory memories of speech, and consider what effects are produced by its destruction; then, in like manner, I shall take B, containing the motor memories of spoken speech; and then, successively, C and D, the two centres containing the visual and motor memories of printed and written speech.

AUDITORY APHASIA.

By the term Auditory Aphasia, is meant the aphasia which results from the destruction or disablement of the auditory word-images at A. The centre for these images is one of the two cortical centres in the brain for hearing. It will be remembered that, though there is a centre for hearing in each hemisphere, and though both centres have probably imprinted in them equally well, or almost equally well, the images of common sounds, only one of them, usually the left, has efficiently imprinted within it the sound-images of words. It is, as shown in the accompanying diagram (Fig. 5), the posterior half or three-fourths of the First Temporal convolution that thus becomes the storehouse of the sound-images of words.

I hope I may be excused for using the term Auditory Aphasia in preference either to the term Sensory Aphasia, proposed by Wernicke, or to the term Word-Deafness, proposed by Kussmaul. "Sensory Aphasia" seems too wide a term, as there are other sensory word-images, viz., the visual, which are not here necessarily involved; and "Word-Deafness" seems too narrow, as this form of aphasia, besides producing Word-Deafness, on the receptive side of speech, produces, on its productive side, the equally important phenomena

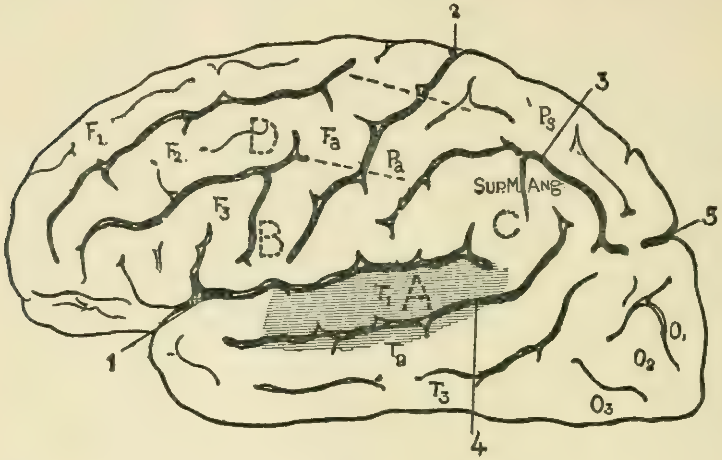

FIG. 5.

of Amnesia Verbalis and Paraphasia. Let us look at the two sets of symptoms thus exhibited in Auditory Aphasia, on the receptive and the productive sides of speech.[1]

Effects on Reception and Intrepretation of Speech.

1. RECEPTION AND INTERPRETATION OF WORDS HEARD.—When the centre A is destroyed, and its accumulated store of word-images annihilated, it can easily be understood that word-deafness is a necessary consequence. So long as the images were intact, the revival of them from without, by incoming audible speech, sufficed to call up instantly, not only the associated motor image, completing the word-percept, but also the associated meaning. But, the auditory word-images being destroyed, the incoming word-sounds can no longer call up the meaning. The words are still *heard* by the remaining auditory centre of the opposite hemisphere, but they are heard as sounds merely, not as intelligible words: they sound to the patient like words of a foreign language which he does not understand. Therefore, if the patient answer questions, he does so at random; unless, from the gesture or expression of the questioner, he can get some indication

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[1] Among special treatises upon the Sensory varieties of Aphasia, the following are three of the best:—(1.) Mlle. Nadine Skwortzoff, *De la Cécité et de la Surdité des mots*, 1881. (2.) Seppilli, "La sordita verbale ed afasia sensoriale," *Revist. speriment di freniatria*, 1884, x., pp. 94–125 (a selection from Seppilli's cases is included in Amidon's collection). (3.) Amidon, "On the Pathological Anatomy of Sensory Aphasia," *New York Med. Journ.*, 1885, pp. 113 and 181.

of what is being asked of him. As such patients are often remarkably quick in drawing inferences from expression and gesture, it is important that the examiner, in testing a case of word-deafness, should carefully command his countenance and abstain from gesture. In cases originally less severe, and in cases in which recovery is advancing, the patient may understand a good deal of what is said to him; but he is apt to exhibit failure in the understanding of nouns, especially of those which are the names of concrete things. It is worth noting that patients unable, from word-deafness, to understand anything else, may yet, in some cases, respond when their own names are called.

In illustration of word-deafness, I think I cannot do better than select some questions and answers from the conversation which is incorporated in Wernicke's record of one of the cases published by him in the paper which did so much to make the phenomena of Sensory Aphasia generally known to the profession.

CASE I. (Wernicke, *Der Aphasische Symptomencomplex*, 1874).—A widow of a workman, aged 59, became suddenly ill in March 1874, with vertigo and headache, but without loss of consciousness; and spoke confusedly, expressing herself sometimes correctly, but answering questions quite at random. The patient at first understood absolutely nothing that was said to her; but one had to take care not to assist her by gesture. Yet when she spoke spontaneously, she expressed herself with intelligence, though she occasionally mispronounced a word or used a wrong one. She gradually improved; and on the 20th of April 1874, when Wernicke recorded the last note of her progress, the word-deafness had disappeared, and she had also made a great advance in power of expression. Here is a little bit of the conversation held with her, on the 18th of March, when improvement had already begun. It will be observed that she understood the first question, a conventional one.

"Good morning, how are you?" "Thank you; I am very well." "How old are you?" "Thank you; fairly well." "How old are you?" "Do you mean to ask how I hear?" "I wish to know how old you are. How old are you?" "Indeed, that is just what I do not know . . . . as I hear folk say." "Would you please to give me your hand?" "I really do not know how I," etc. (no trace of comprehension). "Where is Richard?" "I do not know what I shall say. My name is Frau Adam." "Where is Richard?" (Considers a long time), "Mein Sodam (Sohn), mein Richard."

In this conversation, the commencing improvement in the condition of the patient is shown by her recognition of the meaning of the first question, a conventional one; and in her being able to recognise, though with difficulty, the name of her son Richard.

From the recorded cases of auditory aphasia, it would be easy to multiply examples of Word-Deafness; but one other brief reference to a case may suffice for special illustration of this symptom.

CASE II. (*A patient under the care of* Meynert, *in Vienna; the case being recorded by one of his assistants. It will be found in Mlle. Nadine Skwortzoff's Collection of Cases, Op. cit., p.* 88).—A woman, aged 23. Could not understand even conventional questions. To the question "How do you do?" she replied, "My country is a beautiful one;" and when she was asked to put out her tongue, she remarked, "My brother John," etc.; and yet she replied intelligently to questions if they were accompanied by gestures that enabled her to understand them.

2. RECEPTION AND INTERPRETATION OF WORDS SEEN.—As the auditory word-centre, A, and the visual word centre, C, lie in juxtaposition, they are very apt to be involved together in the same lesion; the patient being then rendered word-blind as well as word-deaf. But in some cases the visual word-centre C is left intact, though the auditory word-centre A is destroyed. In these circumstances, can the patient read visible words? Upon this question there is difference of opinion. It must be remembered that, in the ordinary condition of things, the visual centre C is not directly connected with the meaning. Its connexion with the meaning is only indirect, through A and B. Therefore, when A is destroyed, the chief link connecting C with the meaning is broken. But there remains the other link, B; and the question has yet to be definitely decided how far, in the absence of A, the visual word-image, revived at C, can call up the meaning, by acting upon B. Lichtheim[1] and Wernicke[2] think that it cannot do so, and that the destruction of A necessarily causes the patient to be unable to understand visible as well as audible speech. They hold, however, that there is a form of word-deafness due, not to destruction of the centre A, but to destruction of the subcortical fibres leading from the ears to that centre, and that a lesion of this kind does not interfere with reading, although it renders the patient word-deaf. But this variety of aphasia seems to have been differentiated from clinical observation only, without, as yet, the verification of post-mortem examinations.

According to other authorities, the destruction of the centre A, though it usually damages, does not necessarily destroy the power of reading, because the visual images at C can still call up the meaning by acting upon B, through the connecting fibres represented by the line C B (Fig. 3). Here is a brief note of a case which seems to show that this latter view is the correct one.

CASE III. (*This case was originally recorded by* C. Giraudeau, *Rev. de Med.*, ii. 1882, p. 446. *It is given in Amidon's Collection*

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[1] *Brain*, Jan. 1885, p. 439.

[2] *Fortschr. der Med.*, ii. 1885, p. 828. See his diagram.

of Cases, New York Med. Journ., vol. xli., p. 181).—A widow, aged 46. Had suffered for three months from constant headache, and had become quite word-deaf. To all questions she invariably replied, "What is it you say? I don't understand you. Cure me!" Hearing and sight were intact. *She read well, and answered questions which were written and shown to her.* She died comatose. "On autopsy, there was found a tumour, the size of a walnut, in the posterior part of the left temporal lobe. Above, it reached the fissure of Sylvius; below, it involved three-quarters of the breadth of the second temporal convolution. It reached forward to within three centimetres of the anterior extremity of the temporal lobe, backward to within one centimetre of the posterior extremity of the fissure of Sylvius. It encroached slightly on the white matter, and was easily enucleated."

I think this case affords strong evidence in favour of the view that, at least in some of these cases, the power of understanding printed or written speech is preserved, though the power of understanding words that are heard is destroyed.

I may add here notes of two other cases in which, as in Case III., the patient, though word-deaf, retained the power of reading.

CASE IV. *(Recorded by* Dr Abercromby, *in his Inquiry into the Intellectual Powers*, p. 149, *and quoted by Mlle. Skwortzoff, Op. cit.)*.—A gentleman had ceased to understand words spoken to him, but understood very well written names. As he managed a farm, he had in his room a list of the words which he might chance to hear in his conversations with his workmen. When a workman was talking to him on any subject, he listened without at first seizing anything of the words except the sound. He then looked up the words in his written list, and, whenever he saw them, he understood them perfectly.

CASE V. (Schmidt, 1887; *quoted by Mlle. Skwortzoff)*.—A female, æt. 25. Ten days after parturition, had lost conciousness suddenly, upon making an effort. On recovery, there was no paralysis, but the patient could not understand what was said to her, and had great difficulty in expressing herself spontaneously. "If one wrote down a question upon a slate, she examined the words one after another attentively; tried to pronounce them one by one, and then in more rapid sequence; and then replied."

I think this last case shows pretty plainly that the meaning of the word revived at C was reached only through revival of the motor images at B. Why, it may be asked, should not the meaning be reached directly from C? This question has already been discussed; and we have seen reason to adopt the conclusion that printed and written words are only symbols of symbols, and can therefore call up the meaning only by reviving the primary word-percept or symbol, at A and B, or a part of it, either at A or at B. It is only among those who have read a very great deal that the visible word-symbols may, possibly, at length acquire direct connexions with the meanings; and it is not conclusively proved that such direct connexions may, even in such individuals, be acquired.

Effects upon the Production of Speech.

1. SPOKEN SPEECH.—That Word-Deafness should result from the destruction of the auditory word-images at A is only what anyone would *à priori* have expected. Obviously, the auditory word-images must occupy the first place, in point of importance, in relation to incoming speech. But it could not so easily have been anticipated that these auditory word-images are also of very great importance in relation to outgoing speech. Yet it is so. In relation to outgoing speech, they are of importance in every person; and in those persons who are strongly *auditifs* the importance is probably paramount. In the reception of speech, the word-images are revived from without, by words that are heard or seen; in its production, they are revived from within, by the thoughts that arise in our minds. In most people, the thought that is seeking expression leans towards the motor word-images, but it evidently stimulates also the auditory word-images. It calls up both word-images simultaneously; and it is only when it is able to do so that it can with perfect ease call up the words of all classes required for its expression. In most cases, destruction of the auditory centre does not annihilate the power of expression, it merely damages it; but in persons who are strongly *auditifs*, it may practically destroy it. This interference with the power of expression betrays itself in—

Amnesia Verbalis; Articulative Amnesia; and Paraphasia.—As already indicated, the degree of Amnesia Verbalis exhibited by a case of auditory aphasia seems to differ according to the degree in which the individual is *auditif*. There are cases upon record of what is called "Gibberish Aphasia," in which the word-deaf patient expressed himself in a totally unintelligible jargon, and was yet, owing to his word-deafness, quite unconscious of the fact that he was expressing himself unintelligibly. These may be regarded as extreme instances of Amnesia Verbalis and Paraphasia; and there is reason to believe that destruction of the auditory centre A can furnish such an instance only when the individual affected is very strongly *auditif*. In general, the destruction of the auditory centre leaves the patient in possession of considerable powers of expression. The Amnesia Verbalis in most cases displays itself chiefly or solely in a forgetfulness of nouns, and especially of such nouns as are the names of concrete objects. The patient, when speaking, is from time to time brought to a sudden stop, owing to the forgetting of a noun, and is obliged to explain himself in some roundabout way; or, still more characteristically, he displays Paraphasia in his use of nouns, substituting a wrong noun for a right one, and very often proceeding in his talk without any consciousness of the error. In a few cases the paraphasia takes the form of a recurring utterance. In Auditory Aphasia, Paraphasia is one of the leading and most characteristic of the phenomena,—Word-Deafness on the receptive side of speech, and Amnesia with Paraphasia on its productive, being the leading symptoms of auditory aphasia.

Associated with Amnesia Verbalis there is often that partial amnesia of words which I have termed Articulative Amnesia. The word is remembered in a general way, but some of its articulative details are forgotten, so that, when produced, it is barely recognisable. Here and there in a sentence, a patient with auditory aphasia may produce a word which bears the marks of this Articulative Amnesia; and the words thus imperfectly remembered are for the most part Nouns.

2. Effects on Writing.—The same Amnesia Verbalis, Paraphasia, and Articulative Amnesia that are displayed in what the patient says are also displayed in what he writes, and in his spelling. Writing is, of course, a mere representation of internal speech; and the representation naturally exhibits all the faults of the original. In fact, it seems that, in not a few cases, the characteristic faults are exhibited even more strikingly in what is written than in what is spoken. The name Paragraphia is given to the paraphasia thus exhibited in writing.

I now proceed to illustrate these Faults of Outgoing Speech by further brief references to recorded cases.

Case VI. (Dr Broadbent, *The Lancet*, 1878, p. 312.) *Case showing "Gibberish Aphasia."*—A man, aged 49, had had an obscure cerebral seizure which left him aphasic, but not paralysed, except that he had a slight paresis of the right side of his face. His speech was reduced to unintelligible gibberish, in the midst of which one could distinguish a few words from time to time, such as "If you please, Sir." The patient evidently believed, when speaking, that he was expressing himself intelligibly. Requests to make him do things, made it evident that he was word-deaf. For example, when he was asked to give his hand, he invariably put out his tongue. An autopsy showed a very extensive area of softening which involved the left first temporal convolution.

Two other typical cases of Gibberish Aphasia will be found at pp. 200 and 201 of Sir Frederic Bateman's work. In one of these, recorded originally by Dr Osborne, the patient expressed himself in so extraordinary a jargon that he was treated as a foreigner at the hotel in Dublin where he was living. In this case, Dr Osborne clearly ascertained that when the patient read aloud, "although he employed strange words having no connexion whatever with the text before him, he really understood the sense of what he was purporting to read." When the sentence beginning "It shall be in the power of the College to examine or not to examine any licentiate" was put before him, this is what he made of it, in reading aloud: "An the be what in the temothar of the throthotodoo to majorum," etc. He recovered in course of time. The case is one of great interest, but it is difficult to be sure, from the facts recorded, that the aphasia was due to disablement of the centre A. Possibly it may have been due to fault of conduction between A and B.

It would be easy, from the recorded cases, to give numerous examples of ordinary Amnesia Verbalis and Paraphasia. But it will suffice to give only a few, and I shall try to select cases that will each show some particular feature. I shall begin with a well-known case of extreme Paraphasia, recorded by Trousseau.

CASE VII. (Trousseau, *Clin. Méd.*, 4th ed., vol. ii., p. 674).—"Madame B., mother-in-law of a respected medical man, without ever having had any paralytic symptoms, became somewhat rapidly the subject of very singular affections of intelligence. A visitor calls upon her; she rises to receive him with an air of politeness, and pointing to an arm-chair, says, 'Pig, brute, stupid fool' ('Madame invites you to be seated,' says the son-in-law, who interprets the wish of the patient so strangely expressed). Let us note that the acts of this lady appeared otherwise quite sensible, and, what is curious and not common among aphasics, she did not seem to be annoyed about, or to understand, the meaning of the insulting expressions she made use of."

CASE VIII. (Dr Ross, *On Aphasia*, p. 30.) *The case shows Paraphasia exhibiting itself in the form of a Recurring Utterance.*—James Lee, æt. 57. First came under Dr Ross's observation about 1880. Five months previously, had had a fit of some kind, which did not produce paralysis, but left him unable to speak correctly. There is no mention of word-deafness having at any time been exhibited. Besides Amnesia of nouns and Paraphasia, the patient presented a Paragraphia that was even more marked than his paraphasia. His paraphasia exhibited itself as a Recurring Utterance, viz., the utterance "A public house." "He was handed a bunch of keys, and asked to name one of them; he held it between his thumb and index finger and said,—'It is a public house.' 'That is not a public house,' I said. 'I know it quite well,' he replied; 'I have seen it thousands of times;' and, trying again to name it, he continued, 'It is a—it is a public house. Pooh! I know it quite well.'" This patient was under observation for years. He improved greatly under training. If, in this case, the lesion was situated in the auditory centre A, as seems probable, it was perhaps a lesion not sufficiently severe to produce word-deafness, though sufficient to produce amnesia of nouns and paraphasia. The marked Paragraphia in this case rendered the patient's letters quite unintelligible, though the handwriting was remarkably good.

CASE IX. (Dr Ross, *On Aphasia*, p. 25.) *This case, besides Amnesia Verbalis, Paraphasia, and Word-Deafness, shows Articulative Amnesia.*—Joseph Lander, æt. 51. A seizure, occurring during sleep, made the patient aphasic, word-blind, word-deaf, markedly amnesic, especially of nouns, and paraphasic. A point of special interest is that he exhibited Articulative Amnesia. When Dr Ross asked him to name things, he often showed that he had a general idea of the name, but failed to remember it in detail. Thus when shown a pencil he said, "It's a pu—; it's a punt—no, that's what bothers me." When asked the day of the week (Wednesday) he said it was Waterday. It is worth noting that this patient was more amnesic than word-deaf. The word-deafness seems to have partly passed off before the patient came under Dr Ross's care.

CASE X. (*Treated by* M. Magnan, *in the Asylum of St Anne, Paris. Recorded by Mlle. Skwortzoff, Op. cit.*, p. 71). *The case shows, along with the ordinary symptoms of this form of Aphasia, an Amnesia of Verbs and Prepositions, as well as of Nouns.*—A man, aged 54. His illness had begun gradually five years previously, with Amnesia and Paraphasia. He forgot Nouns, and in a less degree Verbs; and the few verbs retained by him were used in the infinitive. Two years after the first appearance of this amnesia, marked Word-Deafness was developed; and this continued during the whole period of his residence in hospital. A point of special interest in this case is that, besides Amnesia of Nouns, there seems to have been, during the patient's period of residence in the Asylum, a total Amnesia of Verbs and Prepositions. "During the whole period of nine months, when he resided in the Asylum, he never on any single occasion pronounced a verb or a preposition." Another point of great interest is the fact that, in the gradual advance of the lesion, the Production of speech was interfered with before its Reception and Interpretation,—the amnesia appearing before the word-deafness. This seems to show that an incoming Audible Word is a stronger stimulus to and reviver of the word-image, than is an Idea or Meaning seeking expression from within.

Effects upon the powers of Repeating or Echoing words and Copying written words.

Destruction of the centre A naturally interferes with the power of Repeating or Echoing words. If there were only one auditory centre, its destruction would, of course, annihilate that power, so that anything like Echolalia would be impossible. But, as there is another auditory centre, in the opposite hemisphere, and as this may be educated to assume the speech functions of the centre A, the repetition of words heard is often *possible* in auditory aphasia, though it is always difficult till after much practice. Attention to the word-sounds received by this uneducated centre, and to the reproduction of these sounds by the educated motor centre B, is no doubt the basis of the Further Education which in cases of auditory aphasia frequently leads to the complete restoration of speech. At first, in most cases, this reception and reproduction of speech-sounds is obviously difficult to the patient; but it becomes more and more easy as the word-images are more and more securely acquired. Thus, in the case recorded by Schmidt already alluded to (Case V.), there is this further note about the training of the patient to repeat what was said to her:—"She heard when one pronounced the vowels separately, and she repeated them. If one pronounced a monosyllabic word, she did not understand it; but if one separated the different letters in such a manner as to accentuate them clearly, she repeated it. For words of two syllables, it was necessary, to begin with, to pronounce distinctly the first syllable, then the next, and then the two together, in order to get her to understand the word. Little by little, she learned to seize words more quickly; but six months elapsed before she could understand, without its being repeated to her, an entire phrase, though short and pronounced slowly, with accent on every word." It may be noted that in this case the word-deafness, as usual, disappeared before the amnesia verbalis.

I think the above quotation affords some valuable hints for the Treatment of auditory aphasia.

As to *the copying of written and printed speech*, it appears that auditory aphasia does not interfere with it. Such is the opinion expressed by Wernicke and Lichtheim, who have paid special attention to the point.

The Musical Faculty in Auditory Aphasia.

I have already, in a former paper, indicated that this part of the subject requires further investigation. On the one hand, cases of auditory aphasia due to destruction of the centre A are recorded in which the musical faculty was well preserved; but, on the other hand, impairment of the musical faculty has been found associated with the word-deafness in at least two cases. It is noteworthy, however, that in these two cases (recorded by Wernicke[1] and Lichtheim[2]) the lesion was supposed to be situated, not in the centre A, but in the subcortical fibres leading up to it.[3] In Lichtheim's case, the patient, who had formerly been musical, lost the power of recognising even common melodies; and sometimes asked his children to stop singing quartettes, "as they made too much noise." In Wernicke's case, the patient could recognise tunes whistled to him, and could himself repeat them, but displayed a defect in the hearing of the higher tones. Future investigation will, no doubt, show whether the two auditory centres share equally, or unequally, in the faculty of music.

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[1] *Fortschr. der Med.*, 1886, xi. p. 474.

[2] *Brain*, Jan. 1885, p. 461.

[3] I shall have occasion to refer specially to this view of Lichtheim and Wernicke in a future paper.

Why Auditory Aphasia was so much later in being recognised than Motor Aphasia. Its Curability.

It is interesting to consider the question why the first recognition of auditory aphasia was so much later than that of motor aphasia. There seem to be three reasons.

1. That disease or disablement of the left first temporal convolution ("Wernicke's convolution") is not so common as disease or disablement of Broca's convolution.
2. That for a long time, no doubt, many cases of auditory aphasia were mistaken for cases of mental derangement. When a person who obviously could hear, was yet unable to understand what was said to him, and replied to questions in a totally irrelevant manner, it was very natural to suppose that he was suffering from mental derangement. The condition was not well understood until Wernicke, in 1874, clearly defined it, and described its symptoms.
3. That, owing to speedy education of the uneducated right auditory centre, the effects upon speech of a lesion in the educated left auditory centre pass off, in a large proportion of cases, much more quickly than the effects of a lesion of the educated motor centre. Wernicke says that the word-deafness often passes off, and speech is restored, in the course of six or eight weeks. In some cases, however, the symptoms are permanent, or pass away only very slowly. It is important to note that, when recovery takes place, the Word-Deafness generally passes off before the Amnesia Verbalis and Paraphasia.

Perhaps this greater curability of auditory aphasia may be due to the fact that the auditory centre is the first to receive education in speech, and that possibly, in connexion with its education, there is more "overflow" to the other side than is the case in connexion with the education of the motor centre. However it may be explained, the fact remains, that in cases of auditory aphasia due to destruction of the centre A the "Further Education" of the auditory centre of the opposite side is easier and faster than is, in motor aphasia, the further education of the uneducated motor centre. The following is an interesting case which illustrates this point, and which shows, further, that speech may be entirely recovered even after total destruction of both of the educated centres, auditory and motor.

CASE XI. (Bernard, *De l'Aphasie*, p. 159).—A woman, aged 49, treated by Charcot in the Salpêtrière Hospital. Six years before coming under observation, she had one morning awoke from sleep hemiplegic and aphasic. Two years after this, she had been able to acquire only the power of saying "yes" and "no." At first, the aphasia had been both sensory and motor, so that the patient had been Word-Deaf as well as Aphemic. She had been able to understand only a few of the words spoken to her, and these only after they had been several times repeated. Words spoken had seemed to her only an indistinct noise, "like conversation in a crowd." She could not say precisely how long this word-deafness had lasted, but it had disappeared much sooner than her motor aphasia. Little by little she had recovered from the motor aphasia also, so that when, in 1883, she came under the care of Prof. Charcot, her speech had for some years been thoroughly restored. She was admitted into the Salpêtrière on account of an intercurrent affection unconnected with the brain or speech, viz., an obliteration, by thrombosis, of the abdominal aorta; and of this she died in a few days. On autopsy, it was found that, on the left side of the brain, both the Broca's convolution and the first temporal convolution had been completely destroyed by old softening.

Besides illustrating the possibility of recovery from an aphasia that is both motor and sensory, this case shows that, in the process of recovery, the education of the uneducated centres is easier and more rapid in the case of the auditory than in that of the motor centre.

Summary of Leading Features.

In now summing up the leading features of auditory aphasia it may be said that—

1. It is rarer than motor aphasia.

2. It is more easily curable.

3. It interferes with both the reception and the production of audible speech,—its leading symptoms being, on the reception side, Word-Deafness, and, on the production side, Amnesia Verbalis, Paraphasia, and Articulative Amnesia.

4. It interferes with the Repetition or Echoing of spoken words. Though the words are heard by the uneducated auditory centre, their auditory images are at first not well retained, and the patient has therefore at first difficulty in getting the educated motor centre to conform to these imperfect auditory images of the opposite side; but, with practice, this difficulty generally disappears.

5. As to Written or Printed Speech, we have seen that there is difference of opinion upon the question whether or not the power of Reading is retained; but it has been shown that it is retained in some cases at least. As to Writing, we have seen that the motor act of writing is not interfered with, the handwriting being often good. Nor, apparently, is the power of Copying words in writing interfered with. But when the patient tries to express his thoughts in writing he exhibits faults of expression and faults in spelling equivalent to the faults of his spoken speech, this Paragraphia

being, in fact, only a translation of the Paraphasia in the patient's internal speech. And these faults of written speech are often even more marked than are those of spoken speech.

Treatment of Auditory Aphasia.

The best hints for the treatment of Auditory Aphasia that I have been able to find are those furnished by the record of the case by Schmidt (Case V., p. 197), from which an additional note has been given at page 202. In this case, words were slowly and articulately spoken to the patient, and she was asked to repeat them. Printed words were also shown to her, and she was asked to read them. At first she repeated the words slowly and with difficulty, but with practice she acquired increasing facility. Probably the practice was imprinting the word-images efficiently in the uneducated auditory centre, and at the same time establishing connexions, of the requisite intimacy, between these images and those of the other speech-centres. Even when no special training has been given, the mere habit of listening attentively to the speech of others, and trying to understand it, educates in many cases, as we have seen, the uneducated auditory centre, and in due time establishes connexions sufficiently intimate between its images and those of the other speech-centres. When special training is required, the best that can be given is probably such as was used in the case referred to, viz., training of the patient to repeat words spoken to him, and to read aloud words shown to him. Of course it will be understood that such training should be prescribed only when the condition of the brain and of the general health indicates that such an exercise is not likely to be injurious or too fatiguing to the patient.

(*To be continued.*)

II.—NOTES ON A CASE OF GASTROSTOMY AND ON HYPODERMIC ALIMENTATION.

By Francis M. Caird, M.B., F.R.C.S. Ed., Assistant-Surgeon, Royal Infirmary, Edinburgh.

(*Read before the Edinburgh Medico-Chirurgical Society*, 7*th June* 1893.)

The patient had suffered for the past three years from gastric catarrh, and had received great relief by washing out his stomach. Since November 1891 he had experienced an increasing difficulty in taking solid food and in passing his stomach-tube. Finally, he could only partake of fluids; and, with an œsophageal bougie, a stricture was discovered at the cardiac extremity of the œsophagus. He was admitted to the surgical wards, where he declined the operation of gastrostomy, on account of his great weakness and emaciation.

He came under my care on the 20th March 1892. The patient is a tall man, measuring 5 ft. 10¾ in. In March he weighed 7 st. 10½ lb., having lost 1 st. 5½ lb. since January. He is greatly emaciated, with a concave abdomen and cold extremities. His temperature hovers between 97° and 98°. He has been nourished per rectum, is constantly sipping fluid foods all day long, and is rapidly going down-hill. Very little of the fluid which he takes by the mouth passes through the stricture; the greater part is rejected.

The patient steadily refused to allow any operation, nor did we feel justified in urging it under the circumstances. I thought that we might, however, sustain his strength a little more, and even improve him sufficiently to warrant gastrostomy, by hypodermic alimentation. Sterilized olive oil was accordingly injected into the subcutaneous tissues. The house-surgeon, Mr Carmichael, found that intermuscular injections gave rise to no discomfort, and these were therefore used, the gluteal region being selected. For a week the patient received 3 or 4 ounces of oil in this fashion, and under the treatment he experienced benefit. It is true that we did not appreciably increase his temperature, but his general condition, more especially mental, distinctly gained. He now gladly welcomed the operation of gastrostomy, which was performed under the local anæsthetic effect of cocaine, after the method of Girard, whereby the fibres of the rectus are utilized to form a mouth. The patient experienced no pain or shock during the operation; the stomach was opened with a tenotomy knife, and a fine catheter was introduced for feeding purposes.

After operation the patient's temperature rose a couple of degrees (99°·2), but it was obvious that he did not improve as we had anticipated, and in six days he suddenly collapsed and died. The autopsy disclosed an annular epitheliomatous stricture, through which a No. 8 bougie could be passed with difficulty. There was some thickening about the pylorus, and ulcerated patches were there present, one of which had given way into the peritoneum. The condition of the wound and its vicinity was satisfactory.

It seemed worth while to report this case, because we were able to effect something by the hypodermic administration of oil. It was more than therapeutic suggestion. There seemed to be no limit to the amount of oil which the patient could tolerate. It gave rise to no inconvenience, not even pain, when injected into the tissue of a muscle, and it was rapidly absorbed. Sugar was occasionally combined with the oil. None of the skin punctures inflamed.

It is obvious that the method is capable of extension to many different conditions, and that, so long as a bland sterile nutritive fluid be used, we have no evil result to dread.

Dr Robert Philip has since informed me that hypodermic alimentation has been occasionally employed in phthisis. There is a paper by Pick (*Deutsche Medicinische Wochenschrift*, 1879), in which some experimental and clinical details are cited.

III.—STRANGULATION AND HANGING.

By Charles Templeman, M.D., B.Sc., Surgeon of Police, and Surgeon to Royal Infirmary, Dundee; Lecturer on Clinical Surgery, St Andrews University (University College, Dundee).

(*Read before the Medico-Chirurgical Society of Edinburgh*, 7*th June* 1893.)

Strangulation and hanging are so closely allied, both in their mode of production and the appearances they give rise to, that some medical jurists do not differentiate them.

In both cases death is produced by some mechanical obstruction to the respiration from pressure applied externally to the air passages. The difference between the two lies in the manner in which the force producing this obstruction is applied. In strangulation the result is brought about by compression by the hand as in throttling, or by a rope or some such instrument, while in hanging the constricting force is the weight of the body which is more or less suspended.

The importance of differentiating these modes of death consists in the fact that the presumption of culpability is very different in the two cases. In death from strangulation the presumption is strongly in favour of homicide or accident, while in hanging the great probability is that the death had been either suicidal or accidental.

The post-mortem appearances in both cases are almost identical, and are those found associated with death from asphyxia. These, however, vary greatly in degree in individual cases, some of the more important being occasionally absent altogether, while sometimes the principal or almost the only morbid condition present is a deeply congested state of the cerebral membranes. In those cases in which, from the position of the ligature or the amount of pressure applied to the air passages, the obstruction to the respiration is not complete, the compression of the large vessels of the neck, interfering with the cerebral circulation, produces a deep congestion of the cerebral membranes and death by coma; while, on the other hand, when the pressure is severe, and especially if applied below the thyroid cartilage, the respiration is completely obstructed and death takes place with great rapidity, the heart and lungs presenting the appearances met with in death from asphyxia.

The remarks which follow are chiefly based on a consideration of the following cases,—four cases of strangulation, one of which was homicidal, one suicidal, and two accidental, and twenty-four cases of hanging, one being a case of judicial execution, two of accidental, and the remainder of suicidal hanging. As I have had no personal experience of cases of throttling, I omit this part of the subject altogether.

The first case to which I would direct attention is an interesting one of homicidal strangulation.

On a Sunday evening in February 1889, a man called at the Central Police Station, Dundee, and reported that during the night of the previous Monday his wife had strangled herself with a piece of rope, and that on waking out of a drunken sleep on the Tuesday morning he had discovered her lying dead on the floor with the rope round her neck. He also stated that on making this discovery, in a fit of passion he had mutilated the body by ripping up the abdomen, and had then packed the remains in a large wooden box.

On being communicated with I at once proceeded to the house, and found the body jammed into a large wooden box as described, and covered over with books and articles of clothing. On the same evening, along with Dr A. M. Stalker, I made a post-mortem examination of the body.

The body was that of a well-nourished young woman, who had apparently been dead for five or six days. The only trace of decomposition observed was a very slight greenish discoloration of the right side of the abdomen. (The weather at the time had been very cold, and the body had been lying covered up in a room below the street level). There was a considerable number of bruises on different parts of the body. There was some clotted blood in both nostrils, and a small stream of blood had trickled across the cheek from the right side of the mouth. There was a large number of wounds on the front of the abdomen, and from one of these about a foot of small intestine protruded. A mark of constriction passed completely round the neck, over the thyro-hyoid membrane, and maintained this level all the way round, with the exception of about 2 inches on the left side of the neck, where it inclined slightly upwards. The first 5 inches of this mark on the left side of the neck was brownish-red in colour, and hard. The rest of it was pale in the centre and congested at the edges. It varied in width from one-eighth to one-third of an inch. Just behind the level of the angle of the jaw, on the left side, this mark was joined by another, three-quarters of an inch in length and running downwards and outwards, and here the mark was wider than in any other part of its course. The whole of the neck and face above this line was congested. There was well-marked lividity of the lips, but no protrusion of the tongue. The mark exhibited at parts an extravasation of blood into the skin and subcutaneous tissue. This was especially marked on the right side, where there was a large effusion of blood into the platysma muscle. There was no other injury to any of the structures of the neck. The heart, which was examined *in situ*, was completely empty, but there was a considerable quantity of dark fluid blood in the large veins. Both lungs were congested, and on their anterior surfaces were numerous punctiform hæmorrhages immediately beneath the pleura, particularly over the lower lobes. The mucous membrane of the larynx, trachea, and bronchi was congested. There was some frothy mucus in the larynx and trachea, and some frothy blood-stained mucus in the bronchi. The cerebral membranes were deeply congested. The other organs were normal.

From this examination we were of opinion that death had resulted from asphyxia produced by strangulation, and that the strangulation had been homicidal.

The prisoner's story, as I have already stated, was that he had found the deceased lying dead on the floor, and was of opinion that during the night she had strangled herself.

Two medical gentlemen who appeared for the defence regarded this story as probably correct. While they declined to give a positive opinion as to whether the case was one of strangulation or hanging, they looked upon it as most probably one of suicide. This conclusion they based chiefly on the absence of some of the conditions generally found in cases of homicidal strangulation as described in most text-books,—such as serious mechanical injury to the muscles of the neck and the larynx or trachea, clenching of the hands and marks of injury upon them, and a few others of like import.

A careful study of the appearances, however, showed conclusively that death had been caused by strangulation, and that this could not have been suicidal. The most important guide to the solution of this question was, of course, the direction and appearances of the mark of constriction round the neck.

As a rule, we find that in cases of strangulation the mark is low down in the neck, circular, and complete, while in hanging it is usually high up, oblique, and interrupted. These characteristics, however, cannot of themselves be regarded as unequivocal evidence of strangulation. Lesser, in his *Atlas der Gerichtlichen Medicin*, figures a case of suicide by hanging in which the mark was low down in the neck, oblique, and quite uninterrupted, and I myself have seen two undoubted cases of suicidal hanging, to which I will refer later on, in which the mark was circular and complete. In one of these cases, however, another small mark running from the circular one in a direction upwards and backwards showed that the body had been suspended. In the case under consideration a similar mark gave the cue to the solution of the problem. This mark, as I have already mentioned, was found on the left side of the neck behind the angle of the jaw, and ran downwards and backwards for three-quarters of an inch. It was evident that the knot had been placed at this point, and the traction made in a direction backwards, downwards, and outwards, hence it was clear that the constricting force could not have been the weight of the body itself. Another condition pointing to the same conclusion was the subcutaneous ecchymosis found beneath the mark, and especially the large extravasation into the substance of the platysma. Whilst such ecchymoses are sometimes found in cases of hanging, they are rare, and indicate a degree of violence quite unusual. I have not found them present in any case of suicidal hanging which I have had an opportunity of examining.

The facts which indicated the homicidal nature of the case were—(1), That the rope had been fastened by a slip-knot, and had been passed but once round the neck. In such a case, although it were drawn quite tight by one attempting suicide, insensibility would rapidly ensue, and the grip being relaxed, the pressure on the air-passages would be relieved, and recovery would quickly take place ; but (2), it was clearly impossible for any right-minded person, as deceased was proved to have been, to have applied traction in the direction indicated, of sufficient strength and sufficiently long to produce the condition of the subcutaneous tissues found in this case, and death by asphyxia.

The general facts of the case, too, pointed to the same conclusion. The prisoner had brought his wife from London on false pretences, had squandered all her money, and shortly before her death had borrowed from a neighbour the piece of rope with which the deed had been done.

He was found guilty, and sentenced to death. Before his execution he admitted his guilt, confessing that while deceased was sitting on a chair, and under the influence of liquor, he had thrown the noose round her neck, and, standing to her left and behind her, had quickly pulled it tight in the direction we had indicated in the witness-box.

While it is true that suicide by strangulation is extremely rare, and only under exceptional circumstances possible, there are several cases recorded in which this has been effected by some special arrangement for keeping up the pressure sufficiently long to produce death. This has been done by passing a ligature several times round the neck, making the first turn so tight that, although insensibility is quickly produced, and the tension on the last turns of the ligature is relaxed, the first turn remains sufficiently tight to produce asphyxia. Other cases are recorded in which the same result has been accomplished by placing a ligature somewhat loosely round the neck and inserting a piece of stick beneath it. By twisting this round, and so tightening the ligature, death has resulted where by some means or other the stick was prevented from becoming unwound.

The following case illustrates one method by which this was effected :—

A man, about 45 years of age, had been apprehended and placed in a cell in one of the district police stations. Shortly afterwards he was found dead on his knees in front of the night-stool, which was placed in a corner of the cell, and was covered by a fairly heavy lid fastened on by hinges. He had taken a leather belt he had been wearing, and passing the end of it through the buckle, had passed it round his neck and drawn it tight. This free end he had placed under the lid of the night-stool, and resting on this with his left arm, had prevented it slipping out. He had then thrown his head forwards, and in this manner produced suffocation. There was a mark about one inch in width completely encircling the neck, and passing in front over the cricoid cartilage. There was no fracture or other injury to the cricoid, and no subcutaneous ecchymoses. The post-mortem appearances were the usual ones of asphyxia.

The following were cases of accidental strangulation :—

In 1882 I was called to see the body of a woman who had been found dead under the following circumstances :—She had been taken home in the afternoon much under the influence of liquor, and had been set on a chair, and some hours afterwards was found dead. At the time she had been wearing a scarf, which was tied loosely round her neck. This had got caught on the back of the chair, and by her head falling forwards sufficient pressure had been exerted on the thyro-hyoid membrane to produce death. In this case the principal pathological condition present was a deep congestion of the cerebral membranes, showing death by coma from compression of the vessels of the neck.

In the other case, a woman of 69, of very intemperate habits, was found dead on the floor of her house. She was resting on her knees, her head being about one foot from the floor, and supported by the strings of a worsted cap she was wearing, the back of which was caught by the knob of her kitchen dresser. On the previous night she had been very drunk, and no doubt, while staggering about the house, had fallen by the side of the dresser, when her cap had been caught as described. Across the front of the neck, over the hyoid bone, and extending nearly from ear to ear, was a mark of constriction about three-quarters of an inch broad. This mark passed obliquely upwards at either end, and terminated at the angle of the jaw. The tender skin in front of the neck had been imprinted by the threads of the ligature, the marks of which were very distinct. The face was livid, the lips markedly so. The tongue was partially protruded, and there was some frothy mucus about the mouth and nostrils. Death in this case had resulted from asphyxia.

While, therefore, most cases of strangulation are either of homicidal or accidental origin, the presumption in cases of hanging is always in favour of suicide or accident. In any case of murder by hanging there would require to be an enormous disproportion between the physical strength of the assailant and that of his victim, unless the latter were rendered helpless by some injury or by the administration of some poison, such as alcohol, or were greatly debilitated by disease. Under other circumstances there would necessarily be distinct evidence of a severe and more or less prolonged struggle.

Of the twenty-four cases of hanging which came under my notice, one was a case of judicial execution, two were accidental, and twenty-one were suicidal.

All these cases, in which I had an opportunity of making a post-mortem examination, presented practically the same appearances as the cases of strangulation before referred to. In none of them, however, did I find subcutaneous ecchymoses beneath the mark of the ligature, except in the case of judicial hanging. Here there was rupture of some of the muscles of the neck and extensive bruising of the subcutaneous tissue. (I show you the cervical vertebræ from this case.) Professor A. M. Paterson, who made the preparation, described it at a meeting of the Anatomical Society. The axis was fractured through both pedicles, causing separation of the arch from the body and odontoid process, and on the left side the transverse process was broken off. In the third vertebra the transverse process was fractured on the right side, and incompletely on the left. There was also separation of the body of the axis from that of the third vertebra, with adherence of the intervertebral substance to the former, and rupture of the anterior and posterior common ligaments; also rupture of the posterior atlanto-axial ligament, the soft structures connecting the transverse processes of the second and third vertebræ, and also the vertebral artery. There was also a rupture of the spinal membranes and cord opposite the interval between the second and third vertebræ. The prisoner in this case was about 10½ stones in weight, and the drop allowed was 6 feet 6 inches. The force exerted to produce these lesions may be roughly estimated at 1 ton 8 cwt.

The appearances presented by the cases of suicidal hanging I have seen were very similar. As a rule, the face was placid; there was no congestion, and no prominence of the eyes. The tongue was not generally found protruding. Sometimes around the nostrils and mouth was some frothy mucus, not blood-stained. There was no fracture or dislocation of any of the cervical vertebræ, or rupture of any of the muscles of the neck. The internal appearances were those associated with death by asphyxia. The mark of the rope was generally oblique, interrupted, and high up in the neck. While these are the usual characteristics of the mark in cases of hanging, cases are recorded in which it was circular and continuous. About a fortnight ago I saw the body of a man who had hanged himself in the public street. The mark was hard and parchment-like, and passed completely round the neck over the middle of the thyroid cartilage. The loop was situated over the left ala, and the rope passed up from this point over the chin, thus preventing the mark from assuming its usual oblique position. I had no opportunity of making a post-mortem examination, but, so far as I could discover, there was no fracture or other injury to the larynx.

In another case, which I saw about a year ago, the mark was circular and continuous, and, indeed, the appearance it presented was almost identical with that in the case of homicidal strangulation already described. A watchman, 45 years of age, was found suspended from the branch of a tree. He had rolled a stone to the foot of the tree, and, standing on this, had fastened the end of the rope to a branch, after passing it through a loop and fixing the noose thus made round his neck. Then drawing the noose tight, he had stepped off the stone. When found, his feet were within a few inches of the ground. The mark passed in front over the thyro-hyoid membrane, and was continued round the neck at the same level. The loop had evidently been placed on the left side, about 2 inches behind the angle of the jaw, as at this point the mark was double, and was joined by another, which ran upwards and backwards at an angle of about 75°. This was about an inch and a quarter in length, and gradually got less and less distinct as it passed upwards. As the circumstances of the case showed clearly that it was suicidal, I was not permitted to make a post-mortem examination. The appearances here presented, apart from a knowledge of the circumstances attending the case, would have rendered it impossible to give a decided opinion as to whether it was one of strangulation, and therefore probably homicidal, or of hanging. The second small mark on the left side of the neck showed that the pressure had been applied in a direction upwards and backwards, and the likelihood in such a case would be that the constricting force was the weight of the suspended body itself. The presence or absence of injury to the larynx or other structures of the neck would not have given us much assistance in clearing up this point. Lesser, in his *Atlas der Gerichtlichen Medicin*, vol. ii. plate viii., shows illustrations of several cases of suicidal hanging in which he found the structures of the neck extensively injured. In one case a man had committed suicide by fixing the rope to the door of a water-closet, and throwing himself with great violence from the seat. Here he found rupture of the sterno-mastoid, sterno-hyoid, sterno-thyroid, and omo-hyoid muscles, rupture of the internal coat of the carotid, and a transverse fracture of the upper part of the right ala of the thyroid cartilage. In another similar case he found a transverse fracture of the right ala of the thyroid cartilage, and another of the great cornu of the hyoid bone.

Commenting on these cases he remarks:—"In a large series of cases of death by hanging, from a comparison of the lesions found with the particular method adopted, one concludes that the number and severity of the lesions bear no direct and constant relation either to the thickness of the instrument used or to the force which has been employed, so far as can be judged from the position of the body. I say so far as can be judged from the position of the body, because the fury with which the body has been thrown into such a position, whether standing, sitting, or kneeling, cannot be estimated. The knowledge of the situation in which the body was found, and the instrument with which the hanging has been effected, are not sufficient to enable us to deduce with certainty the consequences of the suspension."

Cases of suicidal hanging in which the suspension of the body had only been partial are by no means rare, and I have seen several instances of this. In one case a woman, 50 years of age, hanged herself by means of a rope fastened to a nail in the roof, but the noose was within 4 feet of the floor, and deceased was on her knees. In another case a man of 35 hanged himself by means of a leather belt which he had fastened to the bedpost. He was found in a sitting position. The mark was half an inch wide, and passed round the neck above the larynx, extending almost from ear to ear. In a third case a woman of 52 had taken a piece of whipcord, and tying the two ends, had passed them over a gas-bracket 5½ feet from the floor. She had then gone down on her knees, passed her head through the noose, and throwing the upper part of her body forwards, had so constricted the larynx as to cause death.

In April 1889 an interesting case of suicidal hanging occurred at the Dundee Royal Lunatic Asylum. It was reported to the Procurator-Fiscal that an inmate there had strangled himself, and I was asked to investigate the case. He had been missing for about twenty minutes, and was found dead on the landing of a stair with a piece of window-cord loosely applied round his neck, and the end was quite free. There was apparently nothing from which he could have suspended himself except the stair rail, which was only about 4 feet from the floor. I found a mark of constriction round the neck, passing in front over the larynx and then obliquely upwards and backwards. On the left side the obliquity was very considerable, and the mark terminated about three-quarters of an inch below and 1 inch behind the lobe of the ear. Beyond this the skin was uninjured for about 1 inch. On the right side the mark was deeper than on the left, but the obliquity was less marked. It passed about 2 inches below the lobe of the ear. It was reddish in colour, and one-third of an inch in width. From its obliquity and want of continuity it was evident that there must have been some degree of suspension. An examination of the cord showed that on one end of it a number of hard knots had been made, and these were much flattened, as if considerable pressure had been applied to them. On the landing where deceased was found was a window about 5 feet from the floor, and the lower half of this was self-closing. Evidently the rope had been passed beneath the lower sash, and the strain on the rope had caused it to slip out. As deceased was a man of 5 feet 10 inches in height, the suspension could only have been partial.

The two cases of accidental hanging to which I was called occurred in children, aged respectively 4½ and 12 years. In both cases the child had been playing with a piece of rope fastened behind a door, and had got accidentally suspended.

None of my cases presented that startling appearance sometimes supposed to be associated with death by hanging, viz., swelling and lividity of the face, prominence and injection of the eyes, etc. In only two cases—that of judicial hanging, and one of suicide—was there a semi-erection of the penis, with emission of semen. Fortunately, in all my cases the circumstantial evidence was sufficiently indicative of their suicidal or accidental character, and in none of them did the question arise as to whether the suspension was ante- or post-mortem. There is no sign which is pathognomonic of ante-mortem suspension. The characteristic appearance of the mark on the neck cannot be relied upon, as all the conditions found in cases of suicidal hanging have been produced experimentally on the dead body within a few hours of death, while the internal appearances are those found associated with death by asphyxia, however produced. Dr Norman Chevers, in his work on *Medical Jurisprudence in India*, calls attention to a condition which Dr Hutchinson, civil surgeon at Patna, says he has invariably observed when the suspension has taken place during life, viz., "A flow of saliva out of the mouth, down the chin, and straight down the chest." "This appearance," he says, "is unmistakable and unvariable, and could not occur in a body hung up after death, the secretion of saliva being a living act." I cannot say that I have found this to be so; for since my attention was called to this statement I have carefully examined three cases of undoubted suicidal hanging, and none of these presented the appearance described.

While these cases sometimes present considerable difficulty to the medical jurist, and from an examination of the body alone it may be impossible to give a definite opinion as to the time at which suspension has taken place, still with a majority of the post-mortem appearances present which are found in death by hanging, and in the absence of other marks of violence indicating a probable manner in which asphyxia could have been produced, along with a knowledge of the circumstances surrounding the case, it is, as a rule, not a difficult matter to formulate an opinion as to the exact character and cause of the death.

IV.—CASE OF MYXŒDEMA CURED BY THYROID FEEDING.

By A. C. Miller, M.D. Edin., Medical Officer to the Belford Hospital, Fort-William, N.B.

As every case of myxœdema has now become of special clinical interest, the following case is submitted as one which has been under observation for several years, and in which the remarkable curative effect of thyroid feeding has been speedily exemplified.

The patient, I. M., æt. 46 years, was first admitted into the Belford Hospital on 24th September 1886. She lived on a croft in a mountain-locked glen, in a hamlet where no regard whatever was paid to sanitary considerations, and where septic affections were liable from time to time to break out. Owing to the close intermixture of families in the township, there was, notwithstanding the generally fine physique of the adult inhabitants, a tendency to tubercular affections, and to mental and neurotic disorders. In some cases a stunted development was observable, while idiocy, with possibly a relation to the cretinoid "diathesis," was not by any means unknown. The climate of the country is moist; but owing to the mountainous character of the land, there is no general *marshiness.* The soil is light. The water is obtained from springs on the hillside,—hard, and probably infiltrated with carbonate of lime, from a vein of limestone which follows the valley. The facts of family and personal history, as noted on patient's admission to hospital in 1886, may here be transcribed.

"Family history is good. Father died from old age, the mother and remaining members of patient's family being alive and well. Patient has been accustomed to the routine living of a crofter's home, potatoes and oatmeal entering largely into the dietary.

"Patient is unmarried; had no previous illness. Present illness has been coming on insidiously for the last three or four years. It began with a feeling of lassitude, disinclination for work, etc. Patient is conscious of a heavy, lethargic condition. Her speech is slow and deliberate. Her face is thick and waxy-looking, except for a blush on the cheeks, which, however, only serves to emphasize the surrounding waxy œdema, especially in the lips and eyelids. The gait, like the speech, is slow and deliberate, and indicates impaired sense of equilibration. Patient feels no pain.

"*State on Admission.*—Patient is a well-built woman, well-nourished and developed. The only obvious morbid appearances are those already described,—the waxy œdema of the face, the slow gait, and the deliberate method of articulation. The expression of the face is that of dull hebetude. Spleen is slightly enlarged. Skin is dry and harsh to the feel. Patient is approaching the menopause, and the menses do not appear quite regularly, but when they do appear they are fairly normal. There is a feeling of numbness and formication in the extremities occasionally. Hearing, taste, and smell normal; sight good; motor reflexes normal. The urine is lightish, cloudy, containing phosphates; sp. gr. 1020; no albumen nor sugar; urea 250 grains. The daily quantity averages from 30 to 50 ounces."

The treatment consisted chiefly of injection of pilocarpine; but little effect, as regarded perspiration, was noted. The hypodermic injection into the tissues at the back of the left shoulder caused considerable sloughing, which reduced patient, and seemed to have a favourable effect on the myxœdematous condition. She was discharged in a few weeks, feeling somewhat improved. Patient was, at considerable intervals, occasionally seen at her own home. The condition showed a tendency to progressiveness.

In July 1891 she expressed a desire to be again admitted to hospital, where for a few weeks she remained under observation.

Salivation and baldness, in addition to the other general features of the disease, were now marked. Patient was treated with iron and purgatives, and on her discharge seemed improved.

Wishing to give her the opportunity of benefiting by the new method of treatment, I communicated with patient in the early part of this year, and invited her to come into hospital, where she presented herself on the 11th May.

Her condition was practically an exaggeration of the state noted previously. Patient looked grossly œdematous. She was unwieldy in appearance, her gait slow and tottering. The general expression was almost fatuous. Movements of the limbs were performed slowly and with hesitation. The articulation was slow and thick. The hands and feet were enlarged in correspondence with the face and trunk. There was a large hump on the spine over the upper dorsal and lower cervical vertebræ, and there were masses of tissue in the supra-clavicular spaces. The upper part of the scalp was almost entirely bald, and there were brownish epithelial crusts scattered over and adherent to the scalp. The eyelids were markedly œdematous, and patient had difficulty in seeing in the mornings, owing to this condition. There was a tendency to dribbling of the saliva from the mouth. Patient was unable to oppose the thumb to the digits, owing to the thickness of the subcutaneous tissue, and she was unable to touch the occiput with her hands.

She complained of a tendency to feel cold and chilly, especially in bed. The skin was dry and harsh. Perspiration was entirely absent. Generally she did not sleep well in bed at night, but in the daytime she felt heavy and drowsy. She was not inclined to work, and when she attempted such light manual work as the washing of the dishes after breakfast, she was frequently obliged to desist on account of the fatigue. There was a tendency to œdema of the feet, more marked in the morning, tending to diminish during the day, but returning at night. The œdema of the face was specially marked on the left side. At night this improved.

Patient did not suffer from headaches, but felt as if her head were enormously big, and "as heavy as lead," so that she had difficulty sometimes in raising it. She says that her memory was very much enfeebled, so that she forgot many things which, since treatment was adopted, she can easily remember. She lost interest in everything, and "did not care for doing anything." Her general intelligence seemed unimpaired. Tactile sensibility was diminished, and the special senses of hearing, sight, and smell were to a slight degree affected. The appetite was poor. Deglutition was sometimes performed with difficulty. The bowels were apt to be constipated; urine was diminished in quantity, but patient had to rise during the night for micturition.

Thyroid Treatment.—For a few days after admission no treatment was adopted, in order that patient might become accustomed to her surroundings. The temperature was found to be uniformly subnormal (96° to 97°·5) and the pulse was abnormally slow; urine 30 to 35 ounces per diem. The first dose of thyroid (being one lobe from a sheep freshly killed) was administered on the 14th May. It was given cooked—fried, and mixed with jelly. An ounce of brandy was given immediately after. No reaction was noted. Another lobe, uncooked, was given on each of the two following days, without apparently any result beyond an increase in the amount of urine, which reached 60 ounces per diem. There was also a tendency to the temperature rising towards normal.

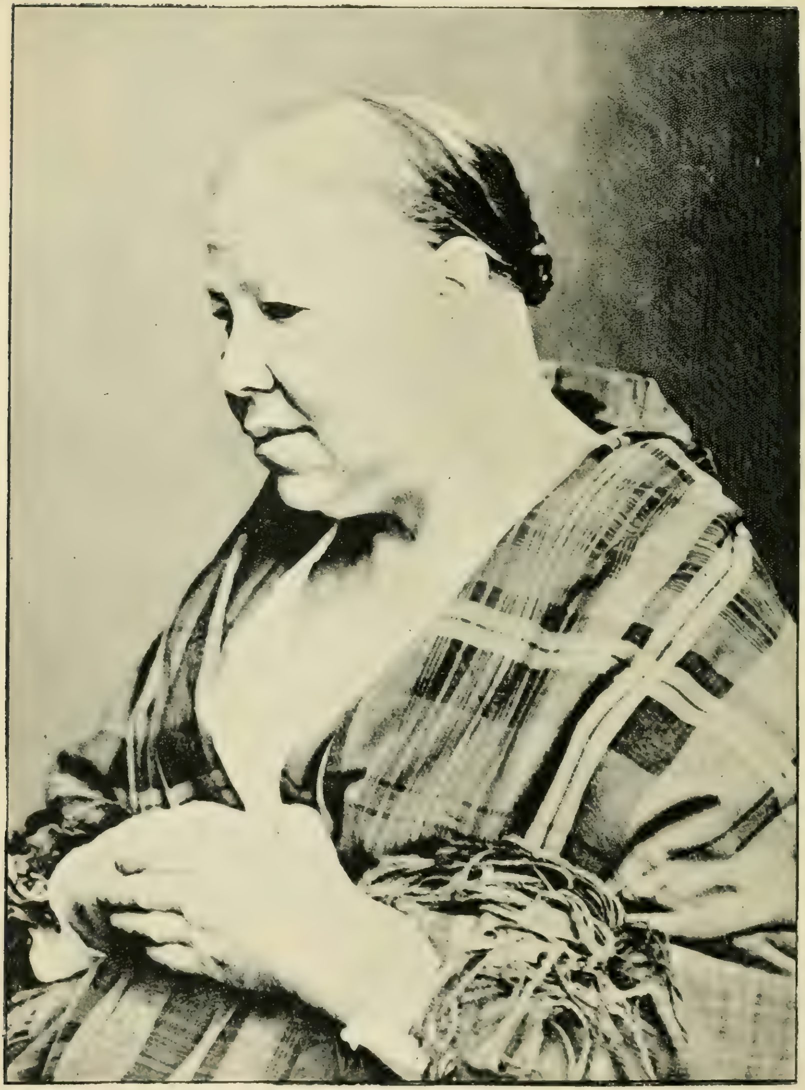
On the fourth day after commencement of the treatment patient began to complain of pains in the lower limbs, accompanied by a rise of temperature to slightly over normal (98°·8 to 99°). The quantity of urine again, however, fell to 30–35 ounces per diem. It was non-albuminous. A thyroid lobe was repeated on the 17th and 18th. Temperature still bordering upon the normal, but pulse going up to 80 to 92. Pains in the limbs complained of. It was now considered safe to push the feeding, and daily doses were administered from the 21st to 26th inclusive. On the dates mentioned only one lobe (half thyroid) was given, but on the intervening days two lobes were daily administered. The temperature showed little variation, ranging from 97°·8 to 98° in the morning to 99° to 99°·2 in the evening. The pulse reacted distinctly, rising to 120 per minute, and patient complained of an inclination to sickness.

It was now quite evident that an alteration was taking place in patient's condition. She was becoming thinner, she was losing her fatuous, stolid, waxy expression, her colour was becoming more natural, there was an easier shading-off between the high pink on the cheeks and the lard-like whiteness of the neck. Patient was herself feeling differently. Her thoughts, her articulation, her movements altogether were more active. The skin was beginning to lose its dry harshness. There was an absence of the choky feeling in the throat. The brownish crusts on the scalp were becoming less adherent, the baldness was being replaced by a downy growth of hair, and there was evidence of general peeling of the epidermis.

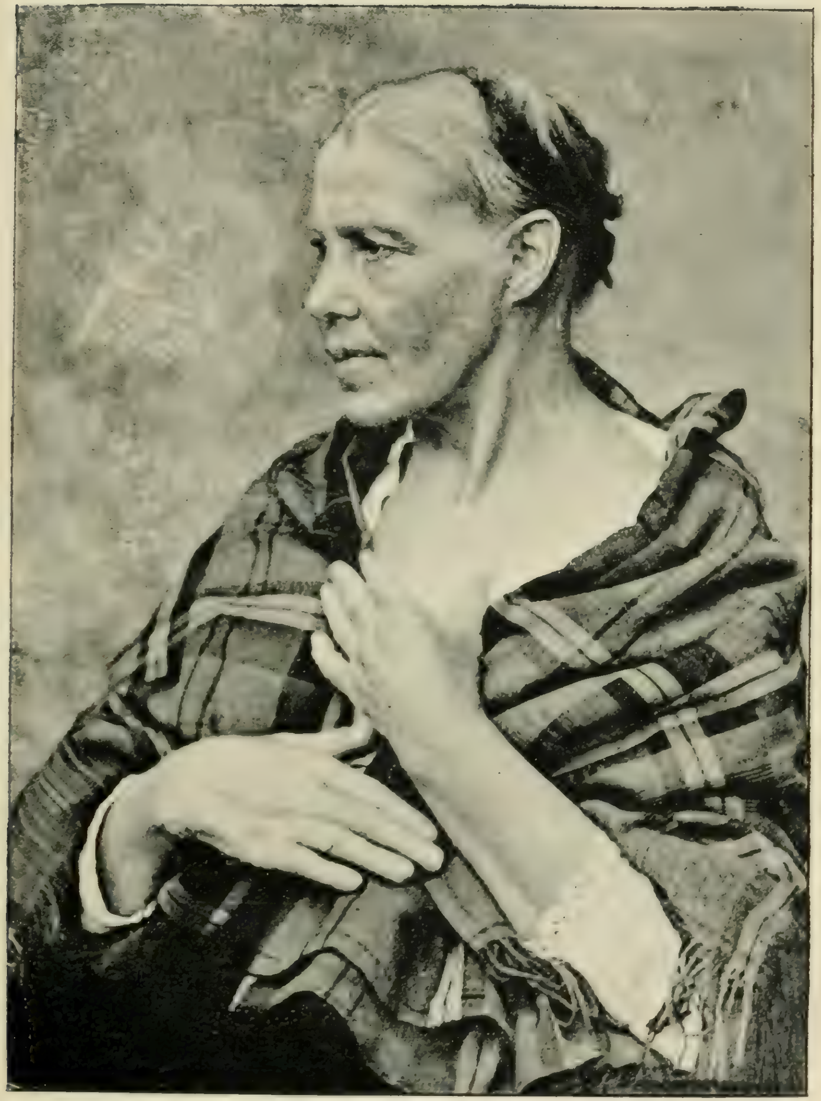
A lobe of thyroid was resumed on the 29th May, and again on the 1st and 2nd of June. But the profound tissue metabolism, which seemed to merely slightly disturb the temperature mechanism, was evidently proving too much for the heart and circulation, as patient gave way to faintness occasionally, and œdema of the feet set in. She was accordingly kept in bed for several days, and the thyroid feeding was intermitted. Tinct. ferri perchlor. was meanwhile administered.

The œdema soon disappeared, and the pulse returned to its normal

DR A. C. MILLER'S CASE OF MYXŒDEMA.



Appearance immediately before Treatment.



Seven weeks after commencement of Treatment.

of 80 to 90. The tissue changes steadily progressed notwithstanding the withholding of treatment, and patient's weight on the undernoted dates was recorded as follows:—

	May 23,	12 stones	8¼ lbs.
	June 4,	11 ,,	9¼ ,,
	,, 11,	11 ,,	2¼ ,,
	,, 19,	10 ,,	13¼ ,,
(Treatment partially in abeyance.)	,, 26,	11 ,,	1 ,,
	July 2,	11 ,,	2 ,,

Comparative measurements were taken as follows:—

	May 22.	June 8.	July 3.
1. Round thick of right calf,	15¼ in.	14 in.	14½ in.
2. ,, ,, left calf,	15½ ,,	14 ,,	14½ ,,
3. ,, ankles,	9½ ,,	8¾ ,,	9 ,,
4. ,, insteps,	10¼ ,,	œdema.	10½ ,,
5. ,, belly of right biceps,	11 ,,	9¾ ,,	10 ,,
6. ,, middle of forearms,	9¾ ,,	8¾ ,,	9 ,,
7. ,, circumference of right hand,	8¾ ,,	8 ,,	7¾ ,,
8. ,, ,, ,, left hand,	8½ ,,	7 ,,	7¾ ,,
9. ,, neck, at level of 7th cervical vertebra to episternal notch,	17¼ ,,	16¾ ,,	16½ ,,

Patient may now (July 3) be regarded as practically cured. One lobe of thyroid will be administered weekly in order to keep up the effect of treatment.

Patient says that she feels better than she has done for ten years, and whereas a few weeks ago she regarded herself as a doomed person suffering from an incurable ailment, and to whom life itself was a burden, she now feels able to undertake the ordinary duties of her station with an unexpected fresh interest in life and all that concerns her.

It will be a simple and easy matter to have recourse to thyroid exhibition from time to time, in order to prevent recurrence of her former state. The only regret that occurs to one in connexion with the marvellous result of treatment in this disease is that it does not apply to a disease having a wider range of victims, such as is the case in tubercle and cancer; but besides curing the malady in question it serves to open up a new field for inquiry, and to encourage the hands of those who conduct investigations in comparative physiology and pathology.

It may be of interest to add that the only other definite case of myxœdema I have met with in this neighbourhood during an experience of seven years occurred in an old woman who lived under very much the same conditions sketched at the outset of this notice. Her age was about 70. She suffered from the affection for many years (twenty or thirty), and finally succumbed to exhausting ulceration from carcinoma of the mamma.

V.—A CASE OF CANCRUM ORIS, WITH A SHORT CRITIQUE ON THE DISEASE.

By ROBERT A. FLEMING, M.A., M.B., C.M., F.R.C.P.E.

(*Read before the Medico-Chirurgical Society of Edinburgh on 7th June* 1893.)

KATIE R., aged 4 years, a Western Dispensary patient, was a pale, delicate-looking child of strumous constitution, with very marked rachitic rosary ribs. Her surroundings were poor and dirty; but with the exception of her mother, who was markedly strumous, the other members of the family were robust and apparently healthy. The child had been in the Sick Children's Hospital with what her mother called inflammation of the lungs, in November of 1890, and again in August 1892 with chronic bronchitis; and she had only been five weeks discharged when she was attacked by measles, specially prevalent at that time in the district.

On the 8th November 1892 the premonitory symptoms appeared, on the 10th diarrhœa began, which continued till the 13th, and on the 11th a well-marked measles eruption appeared all over the body.

15*th.*—There was a slight swelling of the left side of the face, with its centre about half an inch above and external to the ala nasi and just beneath an old cicatrix. The finger in the mouth could detect a localized swelling, hard and resistant, the lower end of which projected slightly from the root of the left canine tooth, just at the junction of cheek and gum. Nearly all the teeth, including the left canine, were broken and carious, and the external cicatrix marked where an abscess at the root of the canine tooth had been opened externally some months before.

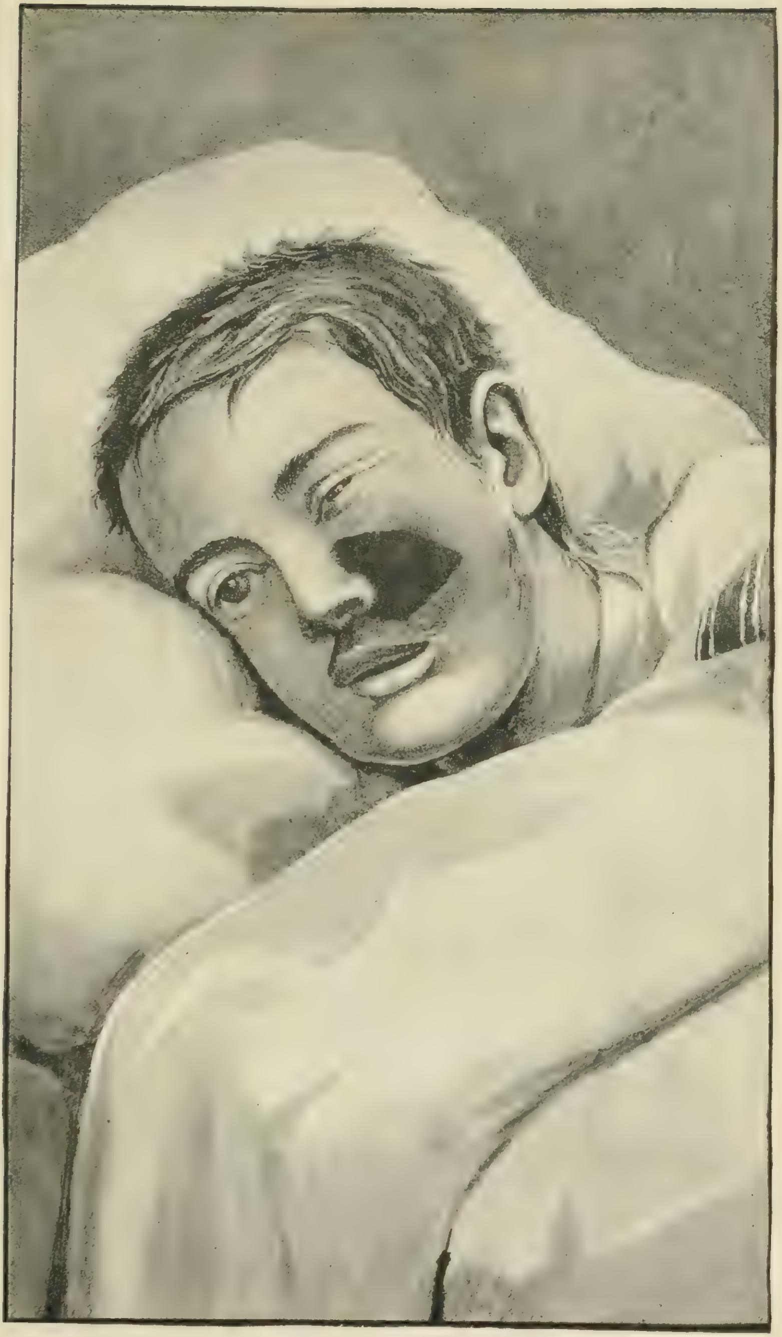
16*th.*—A patch of catarrhal pneumonia appeared at the angle of the left scapula, and on the following day the right base was also suspicious. Patient was dyspnœic, feverish, and prostrate.

18*th.*—The swelling on the cheek had undergone no change; poultices were directed to be applied.

20*th.*—Lung condition much the same. The swelling on the cheek was larger, slightly redder, and softer in the centre; and there was œdema of the upper lip, causing it to overlap to a slight extent.

21*st.*—I saw the patient for the first time, mainly owing to the urgency of the pulmonary conditions, and found evident patches of catarrhal pneumonia at the left base, and also to a less extent at the right.

The swelling on the cheek reminded me exactly of a gumboil at the root of the canine tooth; the cheek was very red, and a bleb had appeared just about the centre of the swelling. There was marked softening, and palpation suggested deep-seated fluctuation,



Dr Fleming's Case of "Cancrum Oris."

while I concluded the reddening and bleb were the result of a too hot poultice. There was nothing visible inside the mouth.

22nd.—Much less respiratory distress; but patient had a large hæmorrhage from the bowel, for which digitalis was administered in full doses by Mr Welsh, the student in charge of the case. There was nothing suggestive of typhoid fever, nor any satisfactory explanation for the hæmorrhage and previous diarrhœa.

23rd.—Breathing easier; slight diarrhœa, but no more bright blood. The œdema of cheek was much greater, and had involved also the left lower eyelid, so that the eye was partially closed. The skin surface was raised, red, and angry. It was found impossible to see into the mouth, but with the finger a superficial slough on the gum of the left upper jaw, and extending on to inner cheek, could be detected. The breath was very fœtid, and there was slight ptyalism, the saliva trickling from the left angle of the mouth, which, however, was not discoloured.

Mr Alexis Thomson, Surgeon to the Dispensary, was asked to see the child by Mr Welsh in my absence, and he made the diagnosis of gangrenous stomatitis, and recommended its removal to the Fever Hospital. The child was admitted the same day to the erysipelas wards. That night it suffered from profuse diarrhœa.

24th.—Diarrhœa was rather better, and child distinctly improved; there was practically no dyspnœa. The swelling was more indurated, with a central softer area, and the breath was extremely fœtid. Condy's fluid was used for washing out the mouth, and iodoform dusted on, and a drachm of whisky administered every two hours.

25th, noon.—I saw a livid patch about the size of a threepenny piece on the external surface, about half an inch above the angle of the mouth, and a little external to it; the induration was much greater all over cheek, except in the centre, and the bleb was still present. Numerous scratch marks, caused by the patient, were observable on the outer side of the cheek. Internally, the left upper gum and side of cheek were diffusely gangrenous.

2 P.M.—An external patch of gangrene, exactly corresponding to the lividity, appeared, and very rapidly spread. Patient seemed very restless, and complained of intense thirst.

26th, 9 A.M.—Gangrenous patch was about the size of a sixpence, and had undermined edges.

11 A.M.—Child much weaker; breath again very fœtid in spite of antiseptics; and gangrene was spreading rapidly.

5.30 P.M.—Gangrenous slough size of a florin.

7 P.M.—The slough now measured 1 by 1⅛ inch, and was of oval shape. Pulse irregular and running, and respiration irregular and slow, and often ceasing for some minutes.

27th.—Appeared to be dying over night, but rallied with vigorous stimulation (ether and whisky).

10 A.M.—Slough still increasing, and assumed triangular shape, with *apex* midway between left ala nasi and inner canthus of eye. *Outer margin* extended downwards and outwards to a point about three-quarters of an inch external to and on the same level with the angle of the mouth. *Inner margin* passed down close to side of nose and slightly round ala. *Base* extended outwards with a slight curve, leaving nearly a quarter of an inch of the left half of upper lip unaffected. The slough was greatly thinned out, and was protected externally by cotton wool and a bandage. When these supports were removed, the slough flapped to and fro with the respirations, and bulged ominously on coughing, every moment threatening rupture.

28*th*.—Little change, and child died at 5·30 P.M., seventy-five hours after gangrene appeared externally.

The post-mortem examination, performed by Dr Maxwell and Mr Welsh, 29th inst., showed old pleuritic adhesions on both sides, binding lungs to parietes—none recent. A few scattered patches of broncho-pneumonia were seen, chiefly at left base; and there were larger areas of collapse in both lungs. Purulent bronchitis was present to a slight extent, especially on right side.

Heart.—Beyond ante-mortem clots extending from right appendix into ventricle, from right ventricle into pulmonary artery, and from left ventricle into aorta, there was nothing.

Intestines were congested throughout whole length; no ulceration; several "agony" intussusceptions were present.

Liver and *Kidneys* showed nothing abnormal. Permission was not granted to remove a portion of the patch, but I inoculated several tubes of gelatine with serum taken from incisions just beyond the margin of the slough.

Cancrum oris, or gangrenous stomatitis, or noma affecting the face, was first differentiated and described by Battus,[1] a Dutch physician, in the beginning of the 17th century. Hippocrates calls any sort of severe ulceration noma. Of all other ancient writers, Galen is most nearly in accordance with our views of the present day.

The early bibliography of this disease is of great interest; its comparatively large amount from the time of Battus up to 1832 (amounting to well over 100 contributions), implies, I believe, its greater frequency then, than now. It is true there was no clear definition of noma prior to the time of Battus, and certainly there has been a great tendency to confuse ulcerative stomatitis, severe local erysipelas, etc., with this disease; but I have without doubt been able to verify many of the cases recorded during that period as genuine cases of noma. Indeed, during this century, and even up to the present day, there is more tendency to confound noma with other diseases, no doubt with the not unnatural desire on the part of the writers to demonstrate the success of their individual modes of treatment.

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[1] *Handbœch der Chirurgen*, Amsterdam, 1620, p. 315.

Most writers agree that it is a disease of childhood, occurring most frequently between 2 and 5 years of age. One or two cases in adults have been reported, generally from military practice.

Noma is met with all over the world, specially in some parts; but its rarity everywhere may be demonstrated from the facts that Dr West only saw seven in 30,000 cases of sickness in children; that Ranke only saw two cases in Munich in twenty-one years in the Universitäts Policlinic, with an average attendance of 4000 to 5000 sick children annually; that in the East London Hospital for Children, of 6364 patients admitted between 1881-87, only five were cases of noma; and in Great Ormond Street Hospital, of 13,000 patients admitted between 1876-88, only six were cases of noma.

It is not easy to give a definition, but noma is gangrene of certain parts of the body, especially cheek and gums—almost always beginning in the mucous membrane or in the substance of cheek—labia, more rarely around anus, still more rarely ears, and in a few cases, which possibly may not be noma at all, consisting of gangrenous patches of skin distributed quite irregularly over the skin of face, neck, and shoulder (Gierke,[1] Ranke,[2] Rilliet and Barthez[3]). According to Littré's *Medical Dictionary*, noma must be independent of a previous lesion.

It commences with great suddenness, and the gangrene spreads with extraordinary rapidity, terminating in at least 75 per cent. of all cases in speedy death.

It is possible that cases of gangrene secondary to ulcerative stomatitis may not be noma, but it is nearly impossible to draw a hard and fast line. Indeed, it is not at all improbable that in every case of true noma, some more or less trivial lesion of mucous membrane or cuticle must exist as a mode of ingress for a specific gangrene-producing organism. Noma certainly attacks the sites of junction of skin and mucous membrane in by far the greater number of cases, and it is just at the orifices of the body that such small lesions are most apt to occur.

Noma of the cheek, or cancrum oris, generally begins on the mucous membrane, just at the junction of cheek and gum, and generally in the upper jaw, though it may be the lower. Less frequently it commences with an induration in the substance of the cheek, and occasionally it appears first on the gum. A bleb, followed by a small ulcer, is generally the first manifestation on the mucous membrane, and soon after infiltration into the substance of the cheek follows, the gangrene appearing first distinctly on the mucous membrane before the slough forms on the cheek. This slough is dry and greenish-black externally, and generally separates, opening into the buccal cavity. Almost invariably the maxillary bone suffers, either the teeth drop out or become exposed to their roots, or sometimes the whole bone dies and separates. The gangrene on the cheek may spread most extensively to eye, ear, and down even to the neck before it is checked or death occurs. There is rarely hæmorrhage, as the vessels are blocked by clot. On the inside of the mouth shreds from the gangrenous tissue are constantly becoming detached, and, mingling with the saliva, cause most intractable diarrhœa.

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[1] *Jahrbuch für Kinderheilkunde*, Leipzig, 1868, p. 281.
[2] *Ibid.*, Leipzig, 1888, p. 325.
[3] Rilliet et Barthez, vol. ii. p. 210.

Etiology.—The condition occurs nearly always among the poor, and especially the dirty poor, generally in strumous, delicate children, and preferably those of the female sex. But these conditions alone are not sufficient, measles most frequently, or some one of the exanthematous fevers, being the precursor; while, according to Goodeve, malaria, along with extreme poverty and starvation, predisposes to noma in Indian children. Curiously enough, noma is most common in spring and autumn, when poverty is supposed to pinch less severely, but winter claims more victims than summer. In moist climates it occurs far more frequently than in dry, sunny lands, and it has been called endemic in low-lying parts of Holland and Sweden. Perhaps one of the most interesting facts is that noma has been found occurring epidemically, but only in greatly overcrowded and ill-regulated hospitals. As instances, Saviard[1] and Poupart[2] both separately record an epidemic in the old Hotel Dieu in Paris in 1699; in the Lyons Hospital several epidemics broke out at different dates,—one in 1817 (Julius), in which eight children were attacked; and lastly, in Birmingham, during 1837 Dr Rylands[3] gives an account of an epidemic of measles in an institution for poor children, in which, out of forty-seven children who were attacked by measles, eight cases of noma followed. I have an instance on record of several members of the same family (Siebert[4]), and also of several individuals in the same building, being attacked coincidentally; while in 1847, Löschner,[5] Director of the St Lazar Children's Hospital, Prague, says that in his experience where noma appeared in cases after admission it always did so in the same wards, though every care had been taken as to their thorough disinfection and cleanliness.

Amongst unsuitable foods tending to produce noma, some of the older writers include excess of cheese, salt meat, and ham (Meza[6]), and herrings and allied fish (Lund[7]), as especially deleterious. Gerhardt[8] considers that the use of mercury in the treatment of children's diseases is certainly a predisposing, if not an exciting cause, and he goes the length of saying that if practitioners gave up mercury in children's practice there would be fewer instances of noma.

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[1] *Nouveau Recueil d'observations chirurgicales*, Paris, 1702, Obs. 28, p. 556.

[2] *Histoire de l'academia royale des Sciences*, Amsterdam, 1704, p. 237.

[3] *Lancet*, 1838–39, vol. ii. p. 491.

[4] *Journal d. Prakt. Heilkunde*, Berlin, 1811, p. 74.

[5] *Vierteljahrschrift für die praktische Heilkunde*, Prague, 1847, vol. ii. p. 271.

[6] *Acta regiæ Societatis medicorum*, Havniensis, vol. ii. p. 117.

[7] *Kongl. Vetenskop. Academicus Handlinger for Ar*, Stockholm, vol. xxvi. p. 36.

[8] *Lehrbuch der Kinderkrankheiten*, Tübingen, 1881, p. 427.

Notwithstanding the opinions of Ranke and Gerhardt, there must surely be a specific organism and a combination of predisposing causes,—not poverty alone, but poverty *plus* a sickly habit of body, and most generally some acute illness, such as measles, as well. No doubt noma does occur in the healthy child, and apparently following in the train of no debilitating disease, but such cases are extremely rare.

Ought we to compare noma to gangrene of the extremities? Some writers think it is due to occlusion of the vessels (Rilliet and Barthez); in a discussion on a paper read before this Society by Dr Keiller[1] in 1861 embolism as a local cause was canvassed; and in 1877, when Sansom's[2] paper on motile bodies which he found in the blood in several cases of noma was read before the Medico-Chirurgical Society, London, it was suggested that, as noma sometimes supervened in pneumonia, it might be due to "the breaking down of clots in the pulmonary vessels," though how this could come about it is difficult to see.

Bazin[3] describes the arteries near patch as having their walls thickened, the lumen blocked with clots, and the veins being permeable, but containing putrescent fluid. It certainly seems more probable that obliteration of vessels is secondary to the gangrene of the tissues, and not primary. Noma can neither be due to cardiac weakness and venous thrombosis alone, nor to embolism nor arterial thrombosis, since the disease never attacks the fingers and toes. It seems certain that noma must be grouped among what Harrison Cripps[4] calls "specific septic gangrenes," due to some specific poison analogous to hospital gangrene, only not nearly so infectious. Those mild cases which heal without treatment, or where a patient survives five or six recurrent attacks, may be due to a less deadly specific agent. In no instance is noma comparable to dry gangrene of the ordinary type.

Morbid Anatomy.—The necrosed tissue is made up of molecular débris, bacteria of the putrefactive order, etc., while beyond the periphery of the patch the muscles and fibrous tissue are infiltrated with serum, and there is a great increase of leucocytes, especially around the vessels, and proliferation of nuclei of connective tissue cells.

Ranke[5] and Gravitz[6] describe in the cases they examined a homogeneous zone external to the area of necrosis in which all preexistent tissues are unrecognisable, and outside this again a zone showing great increase of leucocytes and active proliferation of nuclei. In this area, and just at its junction with the homogeneous zone, Ranke further observed karyokinetic figures in the nuclei of leucocytes, connective tissue cells, and muscle fibres, all of which appear just as if the necrotic process had overwhelmed the cells in the very act of multiplication. Schimmelbusch,[1] in 1889, does not describe this necrobiotic zone.

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[1] *Edinburgh Medical Journal*, 1861–2, p. 919.

[2] *Lancet*, 1877, vol. ii. p. 538.

[3] *Dictionnaire Encyclopédique des Sciences médicales*, vol. xiii.

[4] Holmes and Hulke's *A System of Surgery*, vol. i. p. 136.

[5] *Jahrbuch für Kinderkeilkunde und physische Erziehung*, N.F., 1888, p. 309.

[6] *Deutsche Medicinische Wochenschrift*, 1890, p. 318.

As regards the other organs of the body, catarrhal pneumonia is common; sometimes pyæmic abscesses occur in the lungs; and sometimes (as recorded by Victor Horsley[2] in a case published in 1884) petechial hæmorrhages are found in the endocardium, parietal pericardium, peritoneum, and other serous membranes.

The history of the search for the specific organism of noma is of the greatest interest. Sansom[3] described in 1877 small highly refractile bodies with the cross-like appearance of calcium oxalate crystals, and about one-twentieth the size of an average red blood-corpuscle, which he found in the blood, urine, fæces, and discharges from the gangrenous area. Their movements were rapid and progressive, were increased by heat and dilute potash solutions, and were arrested by solutions of quinine or dilute carbolic acid. The red cells of the blood showed greater variety in size, and the white were more numerous. These refractile bodies varied numerically from day to day, and in one case, the day before death, he observed rod-shaped bacteria in the blood.

Inoculation experiments with the blood on mice and guinea-pigs resulted in death, but not from noma, and the refractile bodies were found in the blood in each case. Since these observations were made, Sansom has failed to find these bodies in undoubted cases of noma, and has found them in cases which were not noma at all. Morse[4] in 1878, also Fay and Jordan, record similar motile organisms.

Attention has been lately turned to a search for organisms in the local lesion, and as early as 1842 Froriep[5] described spores of what he considered was a noma fungus, though since then they have been found to be identical with fat cells.

Schimmelbusch[6] of Cologne in 1889 described a short bacillus with rounded corners, many attached in pairs, and some of them in longer threads. These he found at the edge of the necrosed tissue, and spreading into the lymphatics of the apparently healthy tissue. Inoculation at the corner of the mouth in rabbits only caused slight ulcers, generally terminating in small abscesses.

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[1] *Deutsche Medicinische Wochenschrift*, 1889, p. 516.
[2] *Medical Times*, 1884, vol. i. p. 661.
[3] *Medico-Chirurgical Transactions*, London, 1878, p. 1.
[4] *New York Medical Record*, 1885, p. 37.
[5] *Chirurgische Kupfertafeln*, Weimer, 1844.
[6] *Deutsche Medicinische Wochenschrift*, 1889, p. 516.

Gravitz[1] in 1889 describes a nearly pure culture of bacilli which he found occupying the necrosed area in a case of cancrum oris. Corneil and Bâbes,[2] Ranke,[3] and others describe staphylococci and bacteria of diverse forms, mostly apparently putrefactive.

Dr Coats[4] of Glasgow and Dr Lingard describe bacilli perhaps more nearly resembling those seen in Dr Elder's case (*vide* page 228). Coats, besides ordinary putrefactive organisms in the necrosed area, describes a remarkable growth of bacilli in long threads, and with evident spores. These he found in what he called the necrosed but otherwise unaltered tissue, and they extended into the outer zone of infiltration. The bacilli were anærobic, growing into the tissue and away from the surface, and much resembled those of malignant œdema.

Lingard, in a couple of very interesting papers, 1883 and 1888, published in the *Lancet*, gives an account of a bacillus which he finds apparently responsible for what he considers to be essentially the same disease in man, monkeys, and calves, and which he calls the bacillus nomæ. The organisms are found in long threads made up of small bacilli ·004 mm. to ·008 mm. in length and ·001 mm. thick, and they occur mostly at the spreading margin of the patch.

Lingard has performed five post-mortem examinations on cases of noma, and in one he found small hæmorrhages under the exocardium. In these and among the muscle fibres in the neighbourhood he made out numerous minute cocci in couples, but no bacilli. In my own case the inoculation experiments gave no results of any value.

Treatment.—As regards general treatment I need say nothing. Every one is agreed about stimulation, and every one uses antiseptics for the mouth, etc. But what should be done locally? My object in taxing the patience of the Society thus far is to bring forward all the proofs which a study of the literature of the subject could muster, to show that noma is due to a specific organism, and that, although we do not know what that organism certainly is, or whether it may not even possibly be a peaceful resident in most of our buccal cavities under ordinary conditions, almost every case of cure is the result of vigorous surgical treatment.

From the earliest times caustic acids—fuming nitric, hydrochloric, sulphuric—were used, dry caustics of all sorts, and latterly, and with great success, the actual cautery. Christovitch of Salonica in 1889 recounts a case in which he resected the superior maxillary bone for noma with a favourable result.

As a set-off to this, Dr Carmichael showed in 1889, before this Society, the whole superior maxillary bone of a case in which, after the disease spread thus far, it was arrested without treatment, and ultimately resulted in recovery.

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[1] *Deutsche Medicinische Wochenschrift*, 1890, p. 318.

[2] *Les Bactéries*, Paris, 1890, vol. i. p. 558.

[3] *Jahrbuch für Kinderheilkunde*, 1888, Leipzig, p. 329.

[4] *Manual of Pathology*, second edition, 1889, p. 699.

Both the cases here recorded (my own and Dr Elder's) died,—one untreated, and one vigorously treated, though unfortunately too late; but the records of brighter cases exist, and I would conclude by urging much earlier and much more extensive surgical interference.

I am indebted to Mr D. A. Welsh for his very carefully taken notes of the case recorded above.

VI.—CASE OF CANCRUM ORIS.

By George Elder, M.B., C.M., Resident Physician, Royal Infirmary, Edinburgh.

(*Read along with the preceding at the meeting of the Medico-Chirurgical Society on June 7th,* 1893.)

Catherine T., aged 4½ years, was first seen on the morning of the 8th December 1892. The history of the case was as follows:—Exactly a fortnight before a measles rash had appeared on the patient, and she was said to have been very ill during the attack. A few days before she was seen her left cheek had begun to swell up, and on the morning of the 6th December this swelling had become very red. A small black patch was first observed on the morning of the 7th, and this patch had extended very rapidly.

Patient lived in very dirty surroundings, and was evidently very poorly nourished. Immediately on entering the house one was struck with the intense fœtid odour present, and this was worse when one approached the patient.

The child was obviously very ill indeed; pale, lying motionless, except for a slight movement of the hand towards the cheek. She occasionally uttered a low whining sound as if in pain. The pulse was rapid (130), small, and of very low tension. Extremities rather cold and clammy.

In the cheek there was an opening, somewhat oval in shape, with ragged edges, extending from the level of the upper lip to the lower border of the lower jaw. This was separated from the mouth by about ¾ inch of tissue. The lower jaw was exposed for about an inch of its length. Bounding the opening was a dark slough, which merged into a well-marked, raised, greyish-white ring of ⅛ to ¼ of an inch in breadth. This, again, was sharply defined from a reddened œdematous area, which gradually faded into the normal tissues beyond.

The case was evidently too far advanced for much hope of recovery, but it seemed best that she should be operated on at once, and accordingly she was sent to Leith Hospital, where Dr Brown, the house-surgeon, removed the whole of the slough and greyish-white ring beyond, and applied fuming nitric acid to the edges.

The wound was dressed with strips of boracic lint and iodoform, and stimulants were freely given.

The pulse did not improve, however, and became weaker and more rapid, and patient died twenty-four hours after the operation. There had been no extension of the necrotic process during this time, although before the operation the process had been so rapid that from the first appearance of the slough externally to its acquiring the large dimensions already described, there had only elapsed about twenty-six or twenty-eight hours.

Unfortunately a post-mortem examination was not obtained, but within twenty minutes of death a wedge-shaped piece of tissue was removed from the edge of the wound. Within about half an hour of its removal from the body this was incised with a sterilized knife, and inoculations in gelatin and agar-agar were made from the surfaces thus produced. Those in gelatin were kept at the ordinary temperature of the room, those in agar-agar in the incubator, but from neither of these was there any result. No attempt, however, was made to cultivate anærobically.

The piece of tissue itself was hardened in corrosive sublimate, embedded in paraffin, and sections made. These when stained by Gram's method, showed very great leucocytic infiltration around the vessels and spreading outwards from them between the tissues. Besides the leucocytic infiltration there were also numerous bacilli around the vessels and extending outwards into the tissues, and decreasing in numbers with the distance from the vessels. They were very well seen passing between the fat-cells of the tissues of the cheek. These bacilli were found to a distance of about half an inch from edge of opening as made by the operation.

The bacilli were long and comparatively thin, length 3·5 to 5 μ, breadth about ·8 μ, and tapering at either end to a somewhat sharp point. They were very commonly arranged in pairs end to end.

They could be stained pretty well by Gram's method, but were very readily decolorized by clove oil. They also stained, but less satisfactorily, by Kühne's method.

Except at the very free edge, where there were numerous large putrefactive bacilli and cocci, which did not extend any distance into the tissues, these were the only organisms found.

These will be seen to differ from those described by Dr Coats in a case of cancrum oris, which were thicker bacilli, not tapering at the ends, and tending to form long chains. He was able to cultivate them anærobically, and thinks that they may be identical with the bacillus of malignant œdema.

It would appear that no bacilli like those found in the present case have before been described in cancrum oris.

VII.—ON ABORTION.

By JAMES OLIVER, M.D., F.R.S. (Edin.), F.L.S., Physician to the Hospital for Women, London.

(*Concluded from page* 120.)

UNDER ordinary circumstances the villi of the chorion are composed largely of mucous tissue; and it is in consequence of an excessive growth of this tissue that the hydatid mole is produced. It consists of a fœtal membrane, to the surface of which are attached many vesicular bodies of various sizes, and the minute structures of each of these bodies is similar to that of an ordinary myxoma. Generally speaking, when this degeneration takes place the villi over the whole surface of the chorion are affected, and it is more than probable that the disposition is evinced at a very early stage of embryonic development, before even the allantois makes its appearance, and this structure is developed towards the end of the third week after fecundation. The hydatid mole possesses no bloodvessels of its own; it derives all its nourishment by a process of endosmosis from the nutrient fluids which surround it. The ovum may therefore die at a very early stage of its existence, because the degenerated villi intercept and appropriate the nutrient material which otherwise would have gone to support the embryo. Only those villi, as a rule, which would under ordinary circumstances have participated in the formation of the placenta become attached directly to the uterine wall or insinuate themselves more or less deeply into this structure. Now, in the majority of cases of hydatiform degeneration, hæmorrhage is seldom noted before the end of the third month, and this symptom either results from the direct pressure exerted by the enormously enlarged villi, or from the sudden reduction of this pressure in consequence of rupture of these diseased structures. In the one case the walls of the uterine vessels gradually become more and more thinned and eventually rupture, because of the vital pressure exerted by the myxomatous growths, whilst in the other blood escapes when the pressure outside the vessels is diminished, in consequence of the disintegration of some of the altered chorionic villi. I have known cases in which the production of hydatid mole had become practically habitual,—where, in fact, five successive impregnations resulted in the evolution of this pathological product. It sometimes happens, however, that a woman who previously had given birth to healthy children, and had had no miscarriages, aborts with a hydatid mole, and conceiving again very soon after this event brings forth a healthy and full-time child. It has been asserted, but apparently without the slightest evidence, that hydatiform degeneration of the chorionic villi is caused by a syphilitic taint of the impregnated ovum. No satisfactory cause, however, of this enormous growth of a tissue which normally exists in the villi has as yet been adduced.

Regarding the physiology of the amnion, or the function of the fluid which this structure encloses, absolutely nothing is known. At a very early period, even as early as the third week of pregnancy, fluid may be found in the cavity of the amnion. From the composition of this fluid, and the abnormal ingredients which it sometimes contains, it is evident that it does not merely serve to protect the fœtus, but that it fulfils other and more important functions. "Ptomaines" are sometimes found in the amniotic fluid, and it is quite possible that these may exert a prejudicial influence on the embryo, and even cause its death. Under certain circumstances, therefore, this fluid may yet prove to be a potent agent in the production of abortion. It sometimes happens that in consequence of some necrotic change in the fœtal membranes these structures become perforated, and the fluid, which otherwise would have been pent up, escapes more or less constantly. If the perforation occurs at a spot which allows of the amniotic fluid being drained almost immediately it is secreted, death of the fœtus may result, and abortion is then a necessary sequence. Hydramnios, or an excess of fluid in the amnion, is sometimes a correlative of intra-uterine death. The cause of this pathological condition is doubtful, although I have seen cases in which it apparently had been produced by shock, physical as well as mental.

According to some observers, abortion frequently results from a diseased condition of the decidua. I am, however, of opinion that too much importance has been attached to the state of this structure. The chorionic villi, it is true, must, like the roots of a tree, find a suitable spot for their implantation. Many cases of extra-uterine pregnancy occur in which the fœtus is carried to full term, and it is evident from these that the fœtal villi from which the placenta is evolved are endowed largely with the power of adaptation, and that the uterine tissue is not so essential for their growth and the maintenance of the embryo as some authorities would have us believe. It nevertheless occasionally happens apparently that a fecundated ovum during an early period of its existence is aborted because of some obscure change which has taken place in the mucous lining of the uterus, and which most probably exerts its prejudicial influence by interfering with the nutrition of the embryo before the chorionic villi becomes vascular.

The placenta, as I have already remarked, begins to form about the tenth week of pregnancy, and from this period until the completion of embryonic development the fœtus is nourished solely through the medium of this structure by the maternal fluids which bathe it. Whatever, therefore, impairs so completely the utility of this absorbing and depurating structure that the evolutionary changes in the embryo are arrested, is a cause of abortion. Now, according to Turner, the uterine vessels which enter into the formation of the maternal portion of the placenta lose their capillary form and become expanded into large, freely communicating sinuses. In these sinuses the fœtal villi hang, and here and there only are these structures actually attached to the walls of the sinuses by means of trabeculæ which pass from the serotina to the fœtal villi. It is therefore evident that the close apposition of the fœtal villi with the uterine sinuses does not depend upon a direct continuity of tissue, but is maintained through the agency of some obscure force. In order, however, that the arborescent villi of the chorion may not only insinuate themselves into, but become fast anchored to, the uterine tissue, the walls of this organ must offer a certain amount of resistance to the intrusion of these structures. If from any cause the tone of the uterus is inordinately impaired, some of the fœtal villi may fail to drive their way into the environing tissue, or having penetrated into the crypts or depressions prepared for their reception, the structural cohesion which takes place is not so perfect as it should be. Under such circumstances the maternal vessels do not receive from the strains and pressures exerted by the fœtal villi during growth that amount of support which is so requisite for the maintenance of their integrity, and consequently hæmorrhage is apt to take place from the slightest provocation. The walls of the maternal vessels are much more liable to rupture than are those of the vessels in the fœtal villi, for in the latter structures they retain their capillary form; and, besides, there are the various physical and mental influences which, on the part of the mother, predispose to the occurrence of this accident. Once hæmorrhage takes place from these maternal sinuses, it is directly or indirectly apt to result in abortion. The result, however, will depend upon the seat and extent of the lesion, and on whether the blood escapes externally or is pent up in the placental tissue. If it escapes externally it is astonishing how much, and for what length of time, blood may be lost without the process of gestation being thereby terminated. When, under such circumstances, abortion does occur, this event is generally preceded by that of the death of the fœtus. If, on the other hand, the blood does not escape externally, but accumulates in the structure of the placenta, it may either excite uterine contraction there and then and cause abortion, or it may lie latent for a time, and eventually becoming organized, it may so completely interfere with the nutrition of the embryo as to bring about its death, and finally its expulsion from the uterus. It is evident, however, that hæmorrhage into the structure of the placenta often takes place without producing any untoward result, since traces of organized blood-clot are often detected in the placentæ of mature and healthy children.

The chorionic villi continue non-vascular until about the twentieth day after fecundation, and during this period very little alteration has occurred in the vascular condition of the uterus.

Towards the end of the third week of embryonic growth the allantois develops rapidly and thrusts its bloodvessels into the villi of the chorion, and simultaneously the walls of the crypts into which these structures are fitted become highly vascular. In any case, however, it seldom happens that the walls of the maternal sinuses are liable to rupture before the close of the fifth week of pregnancy. When a breach in their continuity does occur at this early period the blood invariably escapes externally, and, generally speaking, it will continue to make its escape externally so long as the conditions which favour its occurrence exist. In some of these cases the hæmorrhage is more free when the patient assumes the recumbent position in bed. The warmth, it would appear, by causing a still further relaxation of the muscular tissue of the uterus, and exciting the vascular system, augments the flow. Want of tone about the uterus, especially in women who have borne children too rapidly, is a common cause of hæmorrhage during pregnancy, and consequently a cause of abortion.

Hæmorrhage from the uterine sinuses is occasionally due to the existence of cardiac or renal disease, so that abortion is sometimes directly attributable to an organic disease from which the mother is suffering.

Blood may be extravasated into the structure of the placenta, and directly or indirectly the fœtus may die in consequence of this accident, but it does not follow that abortion shall immediately succeed this event. The fœtus may, in fact, be detained in the uterus for a greater or less length of time after its death, and without producing any constitutional disturbance in the mother. The following case, which some time ago came under my observation, may be worthy of record:—A woman, aged 26, and married eight years, had given birth to four children, but had had no miscarriages. She was "unwell" on March 24th, 1892, and after this there was complete amenorrhœa until August 15th, on which date she observed a discharge of blood from the vagina, and simultaneously she complained of feeble labour-like pains. The discharge of blood, which was slight, and the pain, which was never severe, continued for fourteen days. With the exception of a slight attack of pain experienced about the end of September, nothing of note occurred until the morning of Oct. 21st, when a hæmorrhagic discharge, more profuse than on the former occasion, again made its appearance, and simultaneously she complained of labour-like pains. The pain and hæmorrhage continued until the following morning, when the product of conception quite entire—fœtus, membranes, and placenta —was expelled *en masse*. This mass, which was almost round, measured about 3 inches in diameter. Over the greater part of its extent the sac which enclosed the fœtus was thick, lobulated, and fibrous-looking. Over a very limited area it was thin and transparent, and through this portion the fœtus could be seen in the interior. On opening the sac the fœtus was unattached, and not a vestige of the umbilical cord could be detected. The fœtus, which was quite shrivelled, was undoubtedly four months old. Sections of the thicker portion of the fœtal sac presented the characters of placenta, with organized blood-clot. In this case it is more than probable that everything went well until August 15th, when blood was effused into the placenta and abortion was threatening. The fœtus must have died almost immediately or very soon after the occurrence of this accident. The clot of blood subsequently became organized, and the uterus did not rid itself of its contents until two months after the death of the fœtus, and during this period the umbilical cord had entirely disappeared.

It sometimes happens that the circulation in the umbilical cord is so completely interrupted, either by knots in the cord or by simple pressure, that death of the fœtus results. These may therefore be included in our list as causes of abortion. Whatever, in fact, causes the death of the fœtus is necessarily a cause of abortion. In our list, therefore, we must include infectious diseases—inherent conditions of the embryo itself—as well as those diseases from which the fœtus in utero may die.

Abortion is sometimes caused by the presence of fibro-myomatous tumours in the uterus; and this result is either due to these growths interfering with the implantation of the chorionic villi, or to their crippling the expansibility of this muscular organ. When these neoplasms interfere with the evolution of the placenta, abortion takes place, as a rule, during the very early days of pregnancy, and the woman may or may not be cognisant of what is happening. The fecundated ovum on arriving in the uterus may be forthwith extruded, or the chorionic villi may ineffectually attempt to form that union with the uterine tissue which is absolutely requisite for the maintenance of the embryo. In the former case no premonitory or other symptom will be noted, whilst in the latter rupture of the unsupported maternal sinuses is apt to take place, and abortion may sooner or later ensue. It sometimes happens, however, that the chorionic villi which are destined to form placenta develop opposite a portion of the uterus which not only permits of an intimate union between the fœtus and maternal structures, but which would, under ordinary circumstances, be maintained until the completion of embryonic growth. In some cases even this actually occurs, and the fœtus is carried to full term, whilst in others the fibro-myomatous growths will not allow the uterus to surrender that amount of space which the fœtus requires for its intra-uterine existence. In the latter case pain is usually experienced for a greater or less length of time before the uterus can be induced to part with its physiological occupant. The following is a typical and extremely interesting case belonging to this variety of abortion, which came under my observation:—A woman whose uterus was the seat of multiple fibro-myomatous growths, married at the age of 45, and soon afterwards became pregnant. Before impregnation a small centrally-situated tumour was detected in the lower abdomen; it extended to 4 inches above the pubes, and measured transversely 5 inches. It was irregular. The cervix was directed towards the left side of the pelvis. In front of it, and extending to the right side, was felt a hard nodular swelling. The whole tumour was uterine.

This patient was married at the age of 45 on Oct. 23rd, 1890. She menstruated twice after this event, and then conceived. From Nov. 22nd, 1890, until April 27th, 1891, when she miscarried, there was complete amenorrhœa. During these months there was neither sickness nor a feeling of nausea. For two months before she aborted she had complained of pain all over the lower abdomen, but more especially on the left side, and this gradually became more and more distressing at times until labour actually set in. Dr Guyon, who attended this patient at the time of the miscarriage, informed me that the fœtus was evidently five months old, that nothing unusual was noted as a result of the presence of the fibromyomatous tumours, and that the patient made a good recovery.

Whatever, therefore, interferes with the expansibility of the uterus may become a cause of abortion. For this reason pelvic inflammatory bands, especially when these are attached to the posterior wall of the uterus, tend to induce abortion. The action of these bands is purely mechanical. It sometimes happens, however, that the evolutionary changes consequent upon pregnancy extend to and alter the character of these adhesions, so that they offer less resistance, and may even allow of the uterus carrying its product of conception to maturity. When abortion takes place in consequence of the results of a pelvic peritonitis, pain is usually the precursor of this event.

Over-indulgence in sexual intercourse on the part of the woman during pregnancy is said to be a cause of abortion. It is doubtful, however, to what extent we can admit the potency of this element. Quite recently a case came under my observation in which sexual excitation played some part in the production of abortion, but I cannot believe it was the sole influence, neither do I think it ever is. In my case the patient, who was 32 years of age, had been married twelve years. She had already given birth to four children, but had never had any miscarriages. When she was three months advanced in her fifth pregnancy she remarked that each time she indulged in sexual intercourse there was a profuse discharge of blood. This condition of affairs persisted for four weeks, when she miscarried. Here, apparently, there was a direct corelationship, but the uterus was so decidedly wanting in tone that I considered the sexual excitation as merely an aggravating agent. I am aware, too, of the fact that in the case of some female animals it has been alleged that abortion results from sexual excitement aroused merely by the approach of a male of the same species. It is, of course, quite possible that the uterus may be abnormally excitable, and that the increased determination of blood to the whole genital tract, which is a necessary concomitant of sexual intercourse, may tend to cause rupture of the maternal sinuses, and subsequently abortion. Some women, we know, miscarry from the slightest provocation—a false step, or some very trivial accident, may determine the pregnancy. In a given case, therefore, it is sometimes difficult, or even impossible, to say why a product of conception is expelled from the uterus before it attains maturity.

Abortion is often directly attributable to some sudden and intense emotional disturbance. Grief, mental shock, and fear, for example, may produce this result. The uterine symptoms, however, which are so induced, and which indicate an impending abortion, may either develop immediately, in consequence of the nerve derangement, or be delayed for some days. The rapidity or slowness with which the uterus responds to the nerve disturbance depends apparently upon whether this organ is acted upon by the stimulating or depressing effects of the emotion. At first extreme fear often acts as a powerful stimulant, and yet it is the most depressing of all the emotions. When the higher nerve-centres of a pregnant woman are thus suddenly disturbed by some emotion, nerve force is generated in excess, and although this excess may be directed to organs which are habitually used, it appears, nevertheless, to exert its influence chiefly upon an organ which is beyond the control of the will. It is quite possible, of course, that a strong emotion may forthwith disturb the pregnant uterus by inhibiting its nerve centre. I may here be allowed to draw attention to the fact that it seldom, if ever, happens that an epileptic woman aborts in consequence of the fit or fits which she may have when pregnant.

Certain localities, it would appear, act prejudicially upon the pregnant woman and tend to produce abortion. English women when they conceive in India are much more likely to abort than when pregnant at home. This, no doubt, is due solely to the depressing influence of the climate. Living at high altitudes is said to be a cause of abortion. I have somewhere read that in certain districts the women who live in the mountains, when they become pregnant descend into the valleys in order to minimize the disposition to abortion.

The force of habit in abortion, as in all other things, is strong. We can hardly, however, speak of this habit being established until at least three or four successive miscarriages have occurred; and in fixing upon this state as a cause we must carefully eliminate all other possible conditions. Habit can only be entertained in those cases in which the abortions succeed each other rapidly. In such the nerve centre, it would appear, will tolerate for a certain length of time the impressions emanating from the pregnant uterus, but immediately they pass this limit uterine contraction is excited, and its contents are eventually expelled. When abortion is due to habit, pain is the first symptom noted.

Women who are unaccustomed to work are apt to abort if they exert themselves to an unusual degree when pregnant. In the case of women who are constantly engaged in laborious occupations I do not believe that the continuance of these during pregnancy, other things being equal, will exert any prejudicial effect on the embryo, nor will they tend to induce abortion. In the case of some of the uncivilized races, it is said, but with no evident reason, that the laborious lives which the women lead tend to make them miscarry.

It is astonishing how readily some women abort, whilst others who undergo excessive fatigue purposely, who subject themselves to all sorts of disturbing influences, fail, nevertheless, even at the expense of their own constitution, to rid themselves of the product of conception, and carry the fœtus to full term.

Treatment.—This must necessarily vary according to the cause. If the impending abortion is due to want of tone in the uterus, we must employ those remedies which will, in our opinion, invigorate this muscular organ. In cases of this description hæmorrhage is the first symptom, and it usually is noted at a very early period of pregnancy. Small doses of ergot and iron should be given frequently, if the uterus is very decidedly wanting in tone. In less marked cases, but even when blood is escaping from the vagina, the administration of some potash salt will prove most efficacious. The salt which I prefer is potassæ bicarbonas in 10-grain doses, given three times a day, in a mixture with bismuthi carbonas. Stimulants should be forbidden. If we have reason to believe that the uterus is abnormally excitable, or that the nervous system is at fault, as in the case of habit or of some emotional disturbance, large doses of bromide should be administered every night at bed-time. Small doses of bromide given during the day are not of so much value as one large dose at night. The mixture which I prefer is made up of the three bromides, Pot., sod., ammon., 10 grs. or more of each; and to counteract the depressing effect of these, 5 or 10 drops of tincture of digitalis may with advantage be added to each dose.

When pain is complained of in association with fibro-myomatous growths or pelvic adhesions, some sedative must be administered. Under such circumstances 10 grs. of phenazonum, in drachm doses of tincture of cinchona, and added to water just as it is about to be taken, should be tried at night. Failing this, however, morphia may have to be resorted to.

VIII.—TUBO-OVARIAN DISEASE: TWO ILLUSTRATIVE CASES, CLINICAL AND PATHOLOGICAL.

By J. Stuart Nairne, F.F.P.S. Glasg., and Anthony Milroy, M.D.

(*Read before the Obstetrical Society of Edinburgh, June* 14, 1893).

Mr President and Gentlemen,—I have ventured to bring these two cases before you for the following reasons:—

1. There is a very fairly complete history of the cases previous to operation.
2. There is a radical difference in the treatment adopted in each case.
3. A considerable time has elapsed since the operations, and we have the conditions of the patients up to date.
4. We have a very complete pathological report from Dr Milroy on one of the cases.
5. I, for one, would be all the better for more light with regard to diagnosis, prognosis, and treatment, and I hope to get it here.

The first case is that of Mrs M'F. Her history previous to coming under observation at this time is as follows, carefully drawn up by Dr Alex. Nairne:—

"Mrs M'F., æt. 34; married 24th October 1890; husband alive; never pregnant; began to menstruate at 14 years of age. Menstruated profusely every fortnight or so, the menstrual fluid being very dark in colour. Had a fever when five or six years of age on the passage home from Malta, whither she had been taken as a soldier's daughter. Twelve years ago, whilst menstruating, waded across a burn, milked some cows, and waded back again, with the result that her menses stopped for fourteen months. After that was fairly well, changing presumably regularly up till two years ago, when she was seized with sudden pain, which she thought cramp, but which continued; and she was laid up with a severe illness for six weeks. She recovered from this, and was again well enough up till the end of June 1891, when she was again seized in a similar manner, and Dr Moffat and Dr Halket were called in to see her."

The following letter from Dr Moffat gives the condition of the patient when he saw her:—

"11 Walworth Terrace, Glasgow, W.,
"*20th January* 1892.

"Dear Sir,—I received a note from the matron of the Samaritan Hospital asking me to send you anything of importance in the history of Mrs M'F.

"What I know of the case is very little, having only attended her for two days. I was called to see her at her home in Cheapside Street, and found her suffering from vomiting, cold shiverings, and complaining of pain in the abdomen. On examination I found a large swelling above the pubis, which I at once took for a distended bladder. I called in about an hour afterwards, and passed a catheter, but only got away about half an ounce of urine. I then ordered a half-grain morphia suppository, and called next morning along with Dr Halket, who put the patient under chloroform. I then passed a trocar into the tumour, and got away about three pints of pus.

"As the woman had no one to attend her, and no home com-

forts, I advised her friends to get her away at once to the hospital.
—Yours truly, DAVID MOFFAT."

On admission to hospital a rounded tumour, closely simulating a distended urinary bladder, was found lying over the pubis, covering the middle line and extending into the left iliac fossa, but not into the right. I think that description conveys sufficiently distinctly that it was really a left-sided tumour whose right border extended over the middle perpendicular line of the body.

Examination per vaginam disclosed the right vaginal roof low, resistant, and evidently with the uterus flexed *right* laterally. The left side of the vaginal roof was full, tense, partly having a feeling of resilience, and movable by the motion of the tumour. The tumour seemed the size of a child's head, and was so anomalous to touch and movement that the diagnosis wavered between that of a suppurating ovarian cyst and that of a huge suppurating Fallopian tube. Of course, we knew already from Dr Moffat's report that some three pints of pus had been abstracted, so that there must be an abscess cavity of some sort was evident.

Ultimately we resolved on "ovarian abscess," with adhesion to the left broad ligament. Practically this was almost a perfect diagnosis; for it was an ovarian abscess, and there were adhesions along the broad ligament. But it was not anticipated that these adhesions consisted virtually of the opened-up Fallopian tube, or of that anatomical curiosity where tube and ovary and broad ligament became inseparable as parts of a tubo-ovarian cyst.

The details of the operations are unnecessary here. Suffice it to say, that a complete hysterectomy was performed, the large open base of the left lateral ligament closed in by a continuous suture, and the stump fixed extra-peritoneally. She made a very easy and rapid recovery.

She has remained well ever since, excepting for occasional headaches; and at the present moment says she is in perfect health, and looks it.

The second case is that of Maggie S., æt. 26, and the following history is copied from the Journal:—

Feb. 13, 1892.—General diagnosis on inspection,—solid tumour of uterus, probably sarcoma.

Menstruation lasts for a fortnight, with considerable loss of blood and great pain. Swelling in both iliac regions, that of left side much larger than that of right side. It is also larger when menstruating, and diminishes in size considerably when menstruation ceases. Commenced to menstruate when 13 years of age, and was regular up to 22 years of age. Has always been healthy, apart from present illness. Her father and mother are alive and healthy.

Family.—She has five sisters and two brothers alive and well. One brother, the first of the family, died in infancy. One brother and one sister older than herself.

Believes her present illness to be due to carrying heavy baskets of butter. The menstruation has become gradually more and more, till it comes now in clots, and lasts a fortnight. She then has usually a clear month before menstruation starts again, but during that time she has leucorrhœa. The pain in the left iliac region is very severe when menstruating, but does not entirely cease when menstruation stops. No pain in left (right?) iliac region. Has also pain in the back, lumbar region; worse when altering. Bowels costive, and have always been so. Micturition painful when menstruating; not so at other times. Has no appetite; this has been the case for a year back. During the time she menstruates she often has a squeamish feeling, and occasionally vomits. Sleeps fairly well. When menstruating the pain sometimes prevents sleep. Has noticed a swelling on the left side since May last, which has been steadily growing.

Inspection.—A large tumour is seen on the front of the abdomen, rising from the left side of the pelvis, extending as high up as the level of the umbilicus, and passing over to the right side to some extent.

She was admitted to Blythswood Hospital and operated upon on March 7, 1892. I shall not trouble you with details of this operation either, but merely state what it was.

In the previous case some doubt had been expressed and perhaps felt by myself, whether hysterectomy had been really necessary, and whether it would not in any subsequent cases be a much better plan to try something more conservative. Immediately on realizing the nature of the case I did so. I made the abdominal incision much larger in order to find room to work, because necessarily a tumour of this sort does not come readily forward. In this case it did not come forward at all, and I had to clip it out, working inconveniently far down in the pelvis. I stitched over the base as in the last instance, and drained. I left the uterus and the right appendages. This case was a long time in recovering. She had peritonitis, became septicæmic, and Dr Halket, who kindly saw her with me in consultation, did not expect her to recover. I did not expect her recovery myself. However, she got better, went off to the country, and seemed to regain her old health. In fact, she did remain well, at least feeling well, till quite recently.

I have just seen her. The uterus is fixed, enlarged; her menstruation is very profuse, at shortened intervals, and frequently clotted. Just before menstruation on the last few occasions she has had violent sickness, retching, and vomiting, and her skin and the whites of her eyes became jaundiced.

If I had made up my mind in this second case to do an hysterectomy, I could have probably done with a smaller incision, —at any rate, the same incision would have served my purpose. But I would then have been able to deal with the whole pelvic floor in a much more thorough manner; the operation would have been easier, more quickly performed, and I think the patient would have made a much more rapid recovery. I think, too, she would now have been quite well, instead of feeling, as she does, not just right; and, as I feel, not beyond the risk of requiring another operation.

Of course, I would not be so foolish as seek to lay down any laws for operation. Every single case will demand its own special treatment. But the question that emerges from a consideration of these two styles of treatment is a very plain and important one, viz.,—Is it easier and better, as a rule, where you have pus disease of one side of the pelvic floor, to work with the whole floor, or with that diseased half only?

I have only one word to add with regard to the nomenclature of the specimens, and that is a clinical one, viz., that I know that the specimens represent the whole of the appendages involved, that the whole of the side and floor were cleared off, and that the ovary and tube must be represented by these specimens.

IX.—UTERINE ROTATION: ITS CLINICAL IMPORTANCE IN PREGNANCY AND LABOUR.

By James Haig Ferguson, M.D., F.R.C.P.E., M.R.C.S., Lecturer on Midwifery and Diseases of Women, School of Medicine; Obstetric Physician, New Town Dispensary, Edinburgh.

(*Read before the Obstetrical Society of Edinburgh on* 11*th January and* 8*th February* 1893.)

(*Concluded from page* 136.)

Prevention of the Form of Post-partum Shock which we have been Considering.

Clearly the way to prevent the occurrence of the shock is to avoid bruising the ovaries in the management of the third stage. I have been unable to find any description of such a danger as this in the application of Credé's method. The only authors who mention anything about pain in the third stage are Riol and Spiegelberg. The former says, in speaking of expression of the placenta,—"The most serious of the inconveniences of this proceeding is certainly the pain produced—a pain which is sometimes not considerable, but which sometimes becomes tolerably acute if expression be practised for a long time, and which obliges the accoucheur to have recourse to another method of deliverance. When the uterus is soft and flabby pain is often produced by long compression, which is so sharp that the patient can no longer bear the action of the hand. Where a great deal of vigour is necessary to expel the placenta the pain is sometimes so great that one must cease to express. There are some women also, timid or nervous, sensitive and delicate, who cannot bear the action of the hand on their abdominal walls, and this pressure, even when slight, causes sharp pain, and sometimes even cries, which necessitate the employment of another means. I have, however, seen women who could not bear the manœuvres of expression to begin with, and who after a few minutes' rest permitted a second and a third attempt, which were always followed by success. Other women, it must be said, prefer uterine expression to any other means of deliverance."

Neither Riol, however, nor any other writer say a word of the ovary in connexion with the pain.

How can we make certain of not including one or both ovaries in our grasp of the uterus during the third stage? Clearly by grasping the uterus antero-posteriorly, and avoiding its lateral borders. Now, in all the descriptions of Credé's method[1] this point is not made perfectly clear. It is implied, perhaps, but it is not stated. The directions given have all a reference to landmarks in the pelvis, not to the position of the uterus. We are told in effect, by all, to pass the ulnar side of the hand down in front of the promontory, the entire hollow of the hand lying on the fundus, and the thumb on the anterior uterine wall behind the symphysis pubis (Spiegelberg, Playfair, Lusk, Charpentier, Grandin, etc.)

Credé and Mundé figure the hand grasping the uterus with the thumb behind the symphysis pubis, and the fingers in front of the promontory of the sacrum. Now, I contend that if the compressing hand be in this position the uterus is not, as a rule, grasped antero-posteriorly, and that the ovaries are consequently in imminent danger. In other words (as we have already seen), *that the term antero-posterior* quâ *the pelvis is not antero-posterior* quâ *the uterus in the great majority of cases.*

To avoid the danger of touching the ovaries, and to make sure of grasping the uterus antero-posteriorly, the hand should be passed into the brim of the pelvis obliquely, and as we can infer that in at least 90 per cent. of cases the uterus is rotated to the right, the ulnar side of the hand should be pressed deeply down in the direction of the left sacro-iliac synchondrosis, while the thumb should be behind the right ilio-pectineal eminence, the fundus of the uterus resting in the hollow of the palm.

In the vast majority of cases such a grasp of the uterus will entirely avoid the ovaries, and firm compression can safely be made without causing the patient much pain or inconvenience.

The reasons why the ovaries are not more frequently injured in the management of the third stage of labour are:—

(1.) The uterus has usually been grasped obliquely as above described, though the fact has not hitherto been recognised, and has escaped observation. When a patient is lying on her left side in the usual obstetric position, it will be found that the operator's left hand involuntarily grasps the uterus in an oblique direction *quâ* the pelvis, and that the attempt to grasp it in an antero-posterior direction *quâ* the pelvis involves a twisted and constrained position of the hand which it would be impossible to keep up for any length of time, and would absolutely prevent the bringing into play of any degree of muscular force. Any accoucheur can prove this for himself in his daily experience. From this it will be observed that when the patient is lying on her left side especially, the accoucheur naturally grasps the uterus obliquely *quâ* the pelvis, and consequently antero-posteriorly as regards itself, so that the ovaries usually escape danger. Even when the patient is lying upon her back it will be found that the hand naturally sinks into the pelvis obliquely in the same way. The common practice, then, in the application of Credé's method, seems to be that the hand is not antero-posterior *quâ* the pelvis, but that it is antero-posterior *quâ* the uterus. In other words, that the safe grip of the uterus which I advocate is the one usually employed, and that the ovaries have hitherto escaped compression more by good chance than by good guidance.

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[1] When I speak of "Credé's method" in this paper, I only mean his method of grasping the uterus, which is the type of the universally accepted "Handgriff."

It is just possible that in consequence of this fortuitous circumstance injuries to the ovaries are more apt to take place when the uterus is either not rotated at all, or where there is rotation to the left.

(2.) Not infrequently, in grasping the uterus in the third stage, even a very slight pressure provokes pain, in all probability ovarian in its nature. The accoucheur in such a case naturally changes his grip, and usually the alteration in the position of the hand relieves the patient from pain, and enables firm compression to be made with little or no discomfort. This sufficiently accounts for Riol's observation quoted above.

The ovary also, owing to its lateral mobility, may slip away from beneath the compressing fingers, and thus escape injury or be but slightly irritated.

In palpating the abdomen in pregnancy the ovary is often to be felt slipping away, as it were, under the fingers.

(3.) If the anterior and posterior surfaces of the uterus are well marked and easily felt, the accoucheur naturally grasps it antero-posteriorly, and alters its position to suit his hand. Sometimes the ovaries can be felt, and thus one is enabled to avoid them.

(4.) It must be remembered that in many cases the employment of the hand through the abdominal wall is simply a precautionary measure for the purpose of detecting and preventing relaxation of the uterus. In these circumstances no great pressure is requisite, and the ovaries, even though touched, are consequently not endangered by too great pressure. Spiegelberg mentions that when compression of the uterus requires to be forcibly done it is often very painful. This, however, does not require to be done very frequently, he remarks, if the third stage be managed properly, and time is given for the natural separation of the placenta to be effected.

Possible injuries to the ovaries during the compression of the third stage must not, however, be left to the determining influence of practically accidental circumstances, but the accoucheur should have a clear idea that if he grasp the uterus in a certain way he will, as far as it is possible to do so, avoid coming in contact with the ovaries. He will, I think, succeed in doing this in most cases by practising the oblique grasp which I have described.

In this connexion I again quote two paragraphs from my previous paper on post-partum shock. If a patient should complain of severe pain during the manipulation of the post-partum uterus, one should always fear that the ovaries are being compressed at the same time. It depends on the temperament of the patient to a great extent, as well as on the amount of bruising to which the ovaries are subjected, whether the symptoms produced by compression of the ovaries will be severe or not. True, it is not often that such alarming reflex symptoms occur as were observed in the three cases which I have recorded, yet there can be no doubt that the ovaries should, as far as possible, be guarded from all sources of irritation, and that every care should be taken to prevent their being injured during the third stage of labour, and immediately post-partum. The injury inflicted on the ovary may not be, and seldom is, so great as to produce shock, but may it not (and I merely throw out this as a suggestion) account perhaps in some measure for some of the low forms of inflammation and other pathological conditions so frequently met with in the ovaries as a result of the puerperal state.

The ovaries undoubtedly run greater risk of being injured in the hands of those who "Credé" the ovaries on no special principle, without regard to the axis of the pelvis, and who are only too glad to get the placenta squeezed out in any way, often immediately after the end of the second stage. But it will be said no such cases have been recorded.

One, however, occasionally reads and hears of cases where so-called syncope has come on in the third stage or immediately thereafter. The uterus had been a little relaxed, and there had possibly been a slight threatening of hæmorrhage. The syncope is ascribed to the trifling loss of blood, often not in excess of what one would expect in a normal labour, instead of being put down, as I think in many cases it should be, to the energetic and forcible kneading which the ovaries, along with the uterus, have been subjected to in the over-zealous but well-meaning efforts of the accoucheur to avert a more or less visionary post-partum hæmorrhage, the so-called syncope being the result of shock, pure and simple.

There is only one condition, so far as I know, where the post-partum uterus should, if possible, be grasped laterally through the abdominal walls, and that is in the operation for washing out its cavity. The lateral grasp is for the purpose of compressing the Fallopian tubes in order to prevent any of the fluid from passing through the tubes into the abdominal cavity. The compression in such cases requires only to be very gentle, so that there is little fear of injuring the ovaries.

Other Causes of Post-partum Shock.

Shock may, of course, come on post-partum under other circumstances.

(1.) A tedious and unusually painful labour is said sometimes to account for it, especially if there be much instrumental interference. The nervous system after a severe labour is depressed by pain, starvation, and loss of sleep. Barnes records a case of shock and sudden death ten hours after labour. There was maniacal excitement in the first stage. Delivery was effected easily with forceps under chloroform. There was no post-mortem, and Barnes ascribes the death to "nervous shock which manifested itself before labour, and which was intensified subsequently."

This condition is to be diagnosed from the syncope which sometimes supervenes on the sudden emptying of a largely distended uterus. As a consequence of this sudden lowering of the intra-abdominal pressure there is dilatation of the abdominal veins, followed by temporary anæmia of the brain.

(2.) *Inversio Uteri* occurring post-partum may also cause shock. It can always be easily diagnosed. It is often brought about by improper and over-forcible compression of the uterus in the attempts to express the placenta.

(3.) *Rupture of the Uterus* usually shocks the unfortunate patient before death puts an end to her sufferings.

In one case which I know of where pregnancy was complicated with an ovarian tumour, soon after the accession of labour pains the patient became insensible and manifested all the symptoms of severe shock. On opening the abdomen a fissure was found in the peritoneum covering the side of the uterus, which seemed to account for the condition. A twisted ovarian pedicle may give rise to shock.

(4.) *Injections into the Uterine Cavity* after labour are sometimes followed by an alarming condition of shock. This happens rarely. It is probably caused by some of the fluid regurgitating through one or both Fallopian tubes. Now, it is impossible that the mere entrance of an antiseptic lotion (or even pure water, as I have once seen) into the peritoneal cavity can account for the condition, seeing that in abdominal operations the abdominal cavity can with impunity and great advantage be washed out with a lotion of similar strength. Simmons records a case where most alarming nervous symptoms followed in a case where he injected with plain water, and he quotes a case of Späth's where shock occurred followed by death in seventy-four hours, after the injection of a solution of acetate of lead into the vagina. The post-mortem showed, in addition to peritonitis, a sediment of sulphate of lead on the peritoneal surface of the ovaries.

The shock in such cases is, I believe, due to the reflex irritation produced by the sudden dilatation of the tubes by hydrostatic pressure, owing to insufficient care having been taken to provide for the reflux of the lotion through the cervix and vagina. It is not at all necessary for the production of this form of shock that the fluid should pass into the peritoneal cavity at all. It is not peritoneal irritation which causes the shock; it is tubal distention, and this tubal distention produces a feeling of the most intense anguish. Such cases are, of course, quite different from the form of shock which was once so common, when it was the fashion to inject strong acids and chemicals into a non-pregnant uterus in the treatment of certain conditions. The fluids injected were intensely irritating in themselves, and they were never injected in sufficient quantity to distend the tubes. They produced shock by their direct chemical action on the tubal mucous membrane, and this was shortly followed by intense inflammation and peritonitis.

Conclusions.

As a result of the foregoing statements the following conclusions can, I think, be safely made:—

1. The uterus, even in the unimpregnated condition, is usually rotated on its longitudinal axis. This rotation becomes much increased in the later months of pregnancy and during labour. In the third stage of labour and immediately post-partum the transverse axis of the uterus often corresponds to the oblique diameter of the pelvis.

2. In the immense majority of cases this rotation is to the right. The fact that the presenting part of the fœtus usually lies in the right oblique diameter of the pelvis is probably due in great measure to this uterine rotation.

3. The ovaries in pregnancy are in close contact with the lateral walls of the uterus.

4. The uterine rotation consequently causes one ovary (usually the left) to lie forwards towards the middle line, and the other (usually the right) to move backwards.

5. The ovaries have a rich ganglionic nervous supply, derived chiefly from the sympathetic system.

6. The ovaries are enlarged during pregnancy; they are congested, and even slight pressure upon them, when palpated through the abdominal walls, gives rise to pain.

7. Any strong irritation of the peripheral sensitive nerves or of the sympathetic nerves is capable of engendering a series of constitutional phenomena collectively known as "*shock.*"

8. There is a certain class of cases where, after labour, alarming manifestations of nervous prostration and insensibility supervene, and where there is neither hæmorrhage nor any of the other recognised causes of such a condition to account for it.

9. These cases are accounted for by injuries inflicted on one or both ovaries in the management of the third stage of labour. During the necessary manipulations at this period the ovaries run the risk of being bruised between the compressing hand and the hard uterus; or the uterus is forcibly tilted over in such a way that the anterior (left) ovary is squeezed between it and the brim of the pelvis.

10. In such cases the patients always complain of great pain, and the more forcible the compression the greater the pain, and the better marked are the reflex manifestations, amounting in certain cases to the production of shock. Such consequences are always better seen in patients of a somewhat neurotic tendency.

11. Analogies are to be found—(1), In cases of abdominal section for the removal of the ovaries, when, if these organs be much bruised in the process, symptoms of shock at once show themselves; and (2), in the shock which so frequently results from injuries to the testicles.

12. In order to avoid injuring the ovaries during the management of the third stage, the uterus must be grasped antero-posteriorly, and it must be kept in mind that *antero-posterior* quâ *the pelvis* and *antero-posterior* quâ *the uterus* are not synonymous terms.

13. If the hand be passed into the pelvis antero-posteriorly the ovaries are apt to be included in the grasp. The hand must therefore be placed obliquely in the pelvis, and then it will grasp the uterus antero-posteriorly. When much force is necessary, special care must at the same time be taken to press the uterus in the proper axis of the pelvis.

14. When the patient is lying on her left side the operator's left hand naturally sinks into the pelvis obliquely, and so the ovaries escape danger.

15. If a patient should complain of much pain during the manipulation of the uterus in the third stage of labour, one should fear that the ovaries are being compressed, and the grasp of the uterus should be changed.

16. It is often difficult to tell in the third stage of labour and immediately post-partum which is the anterior and which is the posterior surface of the uterus, as at these times it frequently presents a somewhat globular shape.

17. The only condition in which the post-partum uterus should be grasped laterally is in the operation for washing out its cavity. The grasp in such a case requires only to be very gentle.

18. Post-partum shock may be due to other causes besides injury to the ovaries.

Literature.

Ahlfeld.—Einige Vorschläge zur Methodik der Vergleichenden Untersuchungen über den Werth der Credé'schen Methode, etc., Cent. für Gyn., 1886, x. 841-845. Auvard.—Travaux d'obstétrique, t. iii. p. 223; Traité pratique d'accouchements, 1889, p. 75.

Ballantyne.—Mitral Stenosis in Labour, Trans. Ed. Obst. Soc., vol. xiii. Bandl.—Ueber das Verhalten des Uterus u. Cervix in der Schwangerschaft u. Während der Geburt., Arch. für Gyn. xii. S. 334; Ueber die Normal Lage, etc., des Uterus, Arch. f. Gyn., 1884, B. xxii. H. 3. S. 408. Barbour.—Anatomy of Labour, Edin., 1889; Atlas of Anatomy of Labour; Anatomy of Pregnancy and Labour, Roy. Coll. of Phys., Edin., Lab. Reports, vol. ii. 1890; The Third Stage of Labour, Trans. Edin. Obst. Soc., vol. xiii. Barnes.—Sudden Death during Labour, Br. Med. Jour., 1866, p. 345. Bayer.—Morphologie der Gebärmutter, etc., Freund's Gynäk. Klinik, Strassburg, 1885. Beck.—Nerves of Pregnant Uterus, Lancet, ii. 1856. Benkiser u. Hofmeier.—Beiträge zur Anatomie des Schwangeren u. Kreissenden Uterus, Stuttgart, 1887. Bischoff.—Etudes sur la théorie de la menstruation, etc., Arch. de Méd., 1854, p. 545. Boart de la Faille.—Monat. f. Geburtskunde, B. xxv. S. 318. Börner.—Ueber den Puerperalen Uterus, Graz., 1875. Braune.—Atlas of Topographical Anatomy. Brown-Séquard.—On Nervous Shock, Holmes' System of Surgery, vol. ii. p. 207. Budin.—Obstétrique et Gynécologie Recherches cliniques et Experimentales, Paris, 1886, p. 383. Bürger.—Ueber die Behandlung der iii. Geburtsperiode, München, 1889.

Cazeaux.—Traité des accouchements,7^e^ éd., p. 56. Chaignot.—Etude sur l'exploration et la sensibilité de l'ovaire et en particulier de la douleur ovarique chez la femme enceinte, Thèse de Paris, 1879. Charcot.—Maladies du système nerveux, 2nd ed., vol. i. p. 320. Charpentier.—Traité pratique des accouchements, 1889. Chéreau.—Memoire pour servir à l'etude des maladies des ovaires, Paris, 1844, p. 137. Churchill.—Diseases of Women, 1866. Claudius.—Ueber die Lage des Uterus, Zeitsch. f. Rat. Medicin, 1865, B. xxiii. S. 209, also Med. Times and Gaz., i. 1865, p. 5. Cohn.—Zur Physiologie u. Diatetik der Nachgeburtsperiode, Zeitsch. f. Geb. u. Gynäk., B. xii. H. 3. Courty.—Traité pratique des maladies de l'uterus. Credé.—Beiträge z. Bestimmung der normalen Lage der gesunden Gebärmutter, Arch. f. Gynäk., 1870, B. i. S. 84; Ueber die Zweckmässigste Methode der Entfernung der Nachgeburt, Mon. f. Geb., 1861, B. xvii. S. 274, and Arch. f. Gynäk., 1881, B. xvii. S. 260; Die behandlung der Nachgeburt, etc., Arch. f. Gynäk., 1888, xxxii. 96-110. Croom.—A Study of the Bladder during Parturition, Edin., 1884.

Depaul.—Clinique Obstet., Paris, 1872-76, p. 103. Devalz.—Du varicocèle ovarien, etc., Thèse, Paris, 1858. Dohrn.—Deutsche Medicinische Wochensch., 1880, No. 41. Duncan (Matthews).—On the Mechanism of the Expulsion of the Placenta, Ed. Med. Jour., April 1871.

Elischer.—On the Nerves of the Ovary, Lancet, i. 1887, p. 290. Erichsen.—Handbook of Surgery, 2nd ed., London, 1882.

Farre.—The Uterus and its Appendages, Supplt. Todd's Encycl. of Anat. and Phys., p. 645. Fehling.—Centralblatt für Gynäk., 1880, B. iv. S. 586. Féré.—La douleur dite ovarienne des Hysteriques a pour siège l'ovaire, Arch. de Neurol., 1882, vol. iii. p. 297. Fischer.—Ueber den Shok, Sammlung Klin. Vortr. v. Volkmann, Leipzig, 1870, No. 10. Frankenhäuser.—Die Nerven der Gebärmutter. Freund.—Die Lage u. Entwickelung der Bechenorgane, Breslau, 1863. Fritsch.—Krankheiten der Frauen, Berlin, 1889.

Gaskell.—Visceral Nerves, Lancet, 1886, vol. i. p. 934. Groeningen und Bardeleben.—Ueber den Shock, Wiesbaden, 1885.

Hart (Berry.)—Topographical and Sectional Anatomy of the Female Pelvis, 1885; Note on the Mechanism of the Separation of the Placenta, etc., Edin. Med. Journal, July 1887; Improved Method of Managing the Third Stage of Labour, Roy. Coll. of Phys. Lab. Rep., vol. ii. 1890; Mitral Stenosis and the Third Stage of Labour, Trans. Obstet. Soc. Edin., vol. xiii. p. 9, and vol. xiv. p. 112. HASSE.—Beobachtungen über die Lage der Eingeweide in Weiblichen Beckeneingange, Arch. f. Gyn., Bd. viii. S. 402. HEGAR and KALTENBACH.—Die operative Gynăkologie, Stuttgart, 1881. HELME.—Physiology of the Third Stage of Labour, Trans. Obstet. Soc. Edin., vol. xiv. p. 14. HÉLIE.—Recherches sur la disposition des fibres musculaires de l'utérus développés par la grossesse, Paris, 1864. HERVIEUX. —Traité clinique et pratique des maladies puerperales, Paris, 1870, p. 371. HICKS.—Anatomy of Ovary, Med. Times and Gaz., i. 1877. HIS.—Die Lage der Eierstocke in der weiblichen Leiche, Arch. f. Anat. und Phys., Leipzig, 1881, pp. 389-404. HOMBURGER.—Ueber die Beziehung der Starke der Ligamenta Rotunda, etc., Freund's Gynäkologische Klinik, Bd. i. S. 677. HOSTEING.—Essai sur la syncope, Paris, 1877. HUNTER (JOHN).—Treatise on the Blood, Inflammation, and Gunshot Wounds, London, 1784.

JASTREBOFF.—On the Normal and Pathological Anatomy of the Ganglion Cervicale Uteri, Trans. Obstet. Soc. London, 1882, xxiii. p. 125. JORDAN (FOURNEAUX).—Essay on Shock, Brit. Med. Journal, 1867, vol. i. JOULIN.—Traité d'accouchements, Paris, 1867, pp. 328 and 372.

KÖLLIKER.—Ueber die Lage der Weiblichen inneren Geschlechtsorgane, Bonn, 1882. KRAUSE (C. F. T.).—Handbuch der Menschlichen Anatomie, Hanover, 1879-80-81. KRAUSE (W.).—Specielle Anatomie, 1879. KÜSTNER. —On the Axis of the Uterus, Zt. für Geb. und Gynäk., Bd. xi. S. 2; Beitrag zur Anatomie der Cervix Uteri, Arch. f. Gyn., Bd. xii. S. 383.

LANDOIS and STIRLING.—Text-Book of Human Physiology (3rd edition). LEE.—Anatomy of Ovary, Med. Times and Gaz., i. 1857; Atlas of Nerves of Uterus. LIEUTAND.—Anatomie historique et pratique, vol. ii. p. 165, note by Portal. LOTHROP.—Heart Failure in the Puerperium, Trans. American Association of Obstetricians and Gynecologists, 1888, vol. i. p. 280. LOUMAIGNE.—De la hernie de l'ovaire, Thèse 1869.

M‘CLINTOCK.—Dublin Med. Press, 1852. M‘CORMACK.—Article "Shock," Quain's Dict. of Medicine. MARTIN (E.).—Die Physiologische Lage und Gestalt der schwangeren Gebärmutter bei der Lebenden, Zt. für Geburt. und Franenk., B. i. 1876, S. 389. MORDRET.—Memoires Acad. Med., 1858. MUNDÉ.—Obstetric Palpation, New York, 1880. MURAT.—Dict. des Sciences Med., 1819, t. xxxix. p. 4.

NEGRIER.—Sur les ovaires, Paris, 1840. NOTHNAGEL.—Handbuch der Krankheiten des Nervensystems, i. Ziemssen's Sammelwerk, xi. Bd., Leipzig, 1876.

OLSHAUSEN.—Die Krankheiten der Ovarien, Stuttgart.

PELIKAN.—Gerichtliche Med. Untersuchungen über den Skopzenthum in Russland, Giessen, 1876. PFANNKUCH.—Arch. f. Gynäkol., iii. B. 3. H. PIROGOFF.—Grundzüge der Allgemeinen Kriegschirurgie, Leipzig, 1864. POTT (PERCIVAL).—Surgical Works, vol. i. p. 492. PUECH.—Des Ovaires; de leurs Anomalies, Mém. de l'Acad. de Montpelier, 1870-71.

RAINY.—On the Structure and Use of the Ligamenta Rotunda, Phil. Trans. London, 1850, part iii. RICHET.—Anatomie Médico-Chirurgicale, 4th ed., p. 581. RIOL.—"Déliverance par Expression," Paris, 1880. RITCHIE.—Ovarian Physiology and Pathology, 1865. ROBIN.—Mémoire sur le modification de la muqueuse utérine pendant et après la grossesse, Mém. de l'Acad. de Médecine, 1861 (at the end of this paper he speaks of the ovary). RÖMER.—On the Third Stage, Arch. f. Gynäk., Bd. xxviii. H. 2. ROUGET.—Article on "Ovary" in Dict. Encyclop. des Sciences Med., vol. xviii. Série 2^e. ROUTH (AMAND).—Rapid Dilatation of the Uterus, Practitioner, 1892. RUNGE.—Die Leitung der Nachgebart-periode, Berliner Klin. Wochenschrift, 1880, No. 44, and also in Cent. f. Gynäk., 1880, No. 26.

Sappey.—Traité d'Anatomie Descriptive, Paris, 1881. Savory.—Article on "Shock," Holmes' System of Surgery, vol. i. p. 376. Schatz.—Ueber die Physiologie und Physiologische Behandlung der Nachgeburtsperiode, Allg. Wien. Med. Ztg., 1886, xxxi. 549. Schauta.—On the Third Stage, Wiener Med. Blätter, 1886, Nos. 11-13. Schroeder und Stratz.—Der Schwangere und Kreissende Uterus, Bonn, 1886. Schüle.—Bemerk zur Behandlung d. Nachgeburtsperiode, Mon. f. Geburt., xxii. 1863, p. 15. Schultze.—Ueber den Mechanismus der spontanen Ausscheidung der Nachgeburt und über den Credé'schen und den Dubliner Handgriff, Deutsche Med. Wochenschrift, 1880, Nos. 51, 52. Schultze (B).—Zur Kenntniss von der Lage der Eingeweide im Weiblichen Becken, Arch. f. Gyn., Bd. ix. S. 262. Schwarz.—Article on "Uterus" in vol. xxxvii. Nouveau Dict. de Médecine. Simmons.—An Occasional Danger in the Use of Vaginal Injections, American Journal of Obstetrics, 1880, vol. xiii. p. 52. Sinéty (De).—De l'ovaire pendant la grossesse, Comptes Rendus de l'Acad. de Sciences, Aout 1877. Spiegelberg.—Text-Book of Midwifery, Sydenham Soc., 1889. Stoltz.—Article "Grossesse" du Nouveau Dict. de Médecine, t. xvii. p. 14. Swan (Joseph).—The Physiology of the Nerves of the Uterus and its Appendages, London, 1846. Symington.—On the Position of the Uterus and Ovaries in the Child, Edin. Med. Journal, July 1886.

Tarnier et Chantreuil.—Traité d'accouchements, Paris, 1878, pp. 184-232. Thiede.—Ueber das Verhaltniss des Cervix Uteri, Zeitsch. f. Gynäk, Bd. iv. S. 210. Travers.—Constitutional Irritation, 2 vols., 1835.

Valentin.—Ueber die Entwickelung des Follikel in dem Eierstock der Säugethiere, Muller's Arch. für Anat. und Phys., 1838, p. 526. Velpeau.—Traité d'accouchements, vol. i. p. 169. Vincent.—Des Causes de la mort prompte après les grands traumatismes accidentels chirurgicaux, Paris, 1878.

Waldeyer.—Eierstöcke und Ei, 1870. Watson.—Discussion on the Intraperitoneal Treatment of Abdominal Tumours, Brit. Med. Jour., 1881, p. 549. Webster.—Female Pelvic Anatomy, Edin., 1892. Wernich.—On Shock, Centr. f. Gynäk., viii. 1884, S. 170. Williams.—Physiological and Pathological Alteration in the Position of the Uterus, Lancet, ii. 1873, pp. 192 and 298. Winckel.—Die Pathologie und Therapie des Wochenbettes, 3rd ed., Berlin, 1878. Winter.—Zwei Medianschnitte durch Gebärende, Berlin, 1889.

X.—NOTE ON THE QUENCHING OF THIRST AFTER ABDOMINAL OPERATIONS.

By Charles W. Cathcart, F.R.C.S., Assistant Surgeon, Edinburgh Royal Infirmary.

(*Read before the Edinburgh Medico-Chirurgical Society*, *7th June* 1893.)

The thirst from which patients suffer after abdominal operations is so well known that I need not enlarge upon it. The cause of it, too, is sufficiently obvious. In such cases, fluids by the mouth are for a variable number of days contra-indicated, in order to obviate or minimize chloroform sickness, lest the consequent retching might strain the recent abdominal wound, and also in many cases to keep down peristalsis of the intestines.

The nutrition of the patient during this period is maintained partly by small supplies from without, given as nutrient suppositories or enemata, and partly by drafts upon the reserves of fat stored up in the patient's body. Water, however, as is well known, is not stored up like fat, and the extra juiciness which may sometimes exist in the connective tissues will soon be exhausted. Therefore, as the lungs, skin, and kidneys are constantly excreting water, patients who are cut off from it after abdominal operations suffer very greatly from thirst, although, perhaps, only slightly from hunger.

In such cases common sense as well as physiological knowledge tell us that only a sufficiency of water will quench the thirst; still, for want of a better method, the usual custom has been, and is, to put off the patient's urgent requests for a good drink with an occasional sip of hot water, a morsel of ice, or the corner of a wet towel, which as a great luxury they are permitted to suck.

It has often gone to my heart to have to use such obvious makeshifts as the lesser of two evils. Last year, however, when reading that the absorption of water injected into the rectum was so rapid that fluid lost in severe hæmorrhage might be replaced by enemata instead of by infusions into the veins, it occurred to me that this absorptive power of the rectum and colon might be utilized for quenching thirst when the necessary fluid could not be given by the mouth. All the necessary data seemed complete as to the cause of the thirst and the way in which water might be taken up by the rectum to quench it, but I wished to test the plan before publishing it.

A few weeks ago a suitable case presented itself. I was called to operate for strangulated hernia. The patient had been vomiting for three days, and had an intense thirst when I saw him. At the operation I found the bowel viable and returned it, but I dared not give him much fluid by the mouth at first, lest I should bring back the sickness or stimulate peristalsis. Accordingly I gave orders that he was to have an enema of half a pint of warm water every two hours while he was awake.

In twelve hours his thirst, which had been a raging one when I left him, was much subdued and bearable. In twenty-four hours it was greatly relieved, and in forty-eight hours, although I could then venture to give him fluids by the mouth, he almost loathed the sight of them. Since then I have successfully used the method to quench thirst in chloroform sickness.

On speaking to various friends on the subject since I announced this communication to Dr Russell, I find that though the idea is original so far as I am concerned, it had occurred to others before me.

Mr Miller some years ago recommended the plan to his class of systematic surgery, and has employed it occasionally in the Infirmary. Mr Logan Turner has seen it mentioned in some journal; and Mr Alexis Thomson, on the recommendation of a writer in the *American Text-book of Surgery*, has employed it in the Infirmary after laparotomy, and after operations for hernia. When I heard that the plan had been already employed, I was inclined at first to withdraw this communication, but I afterwards decided not to do so, because, although the method has certainly been already published, it has not yet been generally recognised.

The fluid used should be either pure water or $\frac{3}{4}$ per cent. saline solution. To secure its absorption the quantity injected should not be larger than $\frac{1}{2}$ to 1 pint. It should be about the temperature of the rectum, and should be injected very slowly. By this method thirst may be quenched in all the cases where water is contra-indicated by the mouth but not by the rectum.

XI.—SOME PRACTICAL RESULTS FROM THE CHEMICAL EXAMINATION OF THE CONTENTS OF THE HEALTHY STOMACH.

By ALEX. LOCKHART GILLESPIE, M.D., F.R.C.P. Ed., Medical Registrar, Edinburgh Royal Infirmary.

(From the Laboratory of the Royal College of Physicians, Edinburgh.)

(*Read before the Medico-Chirurgical Society of Edinburgh on 18th January* 1893.)

(*Continued from p.* 142.)

EXPERIMENT VII.—This experiment was undertaken both to corroborate and to extend the last one. The fluid in the stomach before breakfast could not be obtained in sufficient quantity for testing purposes. Breakfast consisted of mince, made with a considerable quantity of water, bread and butter, and a breakfast-cupful of water. As on the previous occasion, food was taken until the natural cravings for it were appeased.

Observations were made at half, one, one and a half, two, three, and four hours. The procedure adopted was the same as in the last, but no tube plates were made. As there was a little more fluid available, six new investigations were added. First the total proteids were directly calculated (not from addition of the various forms as before), 5 c. cms. of the fluid being evaporated to small bulk, the proteids contained in it precipitated with absolute alcohol, and weighed; the amounts of the individual proteids found afterwards could thus be used to check the result. Secondly, the albumoses were separated into their three varieties and weighed; this was done by means of precipitation with NaCl and dialysis. Thirdly, the amount of sugar present was quantitatively determined. Fourthly, the presence of starch or erythrodextrine was ascertained by means of iodine and iodide of potassium. Fifthly, mucin was qualitatively determined. While, lastly, the digestive power of the different samples was gauged by placing small pieces of boiled fibrin in a few c. cms., and placing it at 40° C. in an incubator.

The fluid obtained at the half hour had a slight gastric smell, but there were little signs of the bread, and no fat to be seen. At the second hour fat droplets could be seen on the surface, and also at the third hour, when the fluid was very thick. At the fourth hour very little fluid could be got, and that obtained was largely mucus.

On reference to Chart IV. (which is similar in construction to the previous ones, the filtered and unfiltered results being, however, placed in the same divisions, the unfiltered results in red in the acid and chlorine division, in broken lines in the total solid part), it will be at once noted that the curves in both the acidity and chlorine sections closely resemble in form those of the preceding experiment, except that the amount of salt taken with the food was purposely diminished, and consequently the chlorine total at the half hour is less prominent.

Filtered.—The total acidity rises abruptly till the second hour, then, after a slight rise at the third, rapidly falls; the combined acidity rises until the second hour, when it reaches ·414 per cent.; then, falling slightly at the third hour, reaches the low figure of ·108 per cent. at the end of the experiment,—that is to say, that between the second and third hours the absorption of peptones was proceeding at such a rate that the acid combining with the proteids in the stomach, still incompletely saturated with acid, was rather less in amount than that absorbed along with and combined with the peptones. At the third hour the proportion of acid absorbed with diffusible proteids had increased greatly as compared with the amount still combining with proteid material in the stomach. The amount of combined acid inside that organ consequently fell very rapidly. Maybe, too, there was some flow through the pylorus.

The combined chlorine follows very closely the acidity curve; the total chlorine, however, is not exactly the same as the total acidity, due, as before, to the presence of fixed chlorine. The total at the half hour is ·4056 per cent., as compared with ·216 per cent. acidity, but ·2508 per cent. of it is due to the fixed chlorine present. The rest of the curve calls for no remark.

Free acidity and free HCl appear at the hour and a half, or rather between that and the second hour, and rise until the end of the experiment.

The fixed chlorine, considerable at first, falls to ·1872 per cent., and remains fairly constant thereat.

The total solid curve is different from that in the last experiment, a comparatively small quantity being dissolved at first, only 4 per cent.; and while more becomes dissolved as digestion proceeds, absorption keeps down the total until the third hour, while increasing absorption during the last hour, between the second and third, raises the percentage of the contained solids. At the third hour the contents were very thick. After this most of the contents of the stomach were ejected through the pylorus, leaving some mucus-laden fluid, with a small proportion of solids, nearly all of which were proteids.

The ash gives a similar curve, but begins to fall sooner.

The proteids are in greater quantity in this experiment than in

The condition of the stomach contents before breakfast can be well studied here, because the small quantity obtained on this occasion was siphoned off without the admixture of water.

A slightly opaque fluid, with a shred or two of mucus in it, and with no gastric smell, its acidity was ·018 per cent., half of which could be driven off by heating, while Günzberg's reagent gave evidence of a trace of free HCl present. The total chlorides ·0624 per cent. (?), only a trace fixed, and a trace free. The total solids ·04 per cent., with an ash so small that it could not be determined. No sugar was present, and no biuret reaction could be obtained.

N.B.—The chlorine was probably only ·0312 per cent., but the quantity which could be used for testing was so small, 1 c. cm., that a slight error, even half a drop too much of the silver, would give a difference of ·0312 per cent. or more. Free chlorine, however, was undoubtedly present, as Günzberg's reagent showed.

Unfiltered.—There is not very much difference between the filtered and unfiltered acidities throughout. The combined rises more quickly and higher in the unfiltered, while the free also rises quicker, but does not reach such a high level as in the other.

The chlorine curves are similar, and only the total line is entered on the chart for the sake of clearness. It does not reach above ·4368 per cent. in the first half hour, compared with ·624 per cent.; this, of course, is due to a difference in the amount of NaCl.

The following are the remaining figures for the chlorine:—

Unfiltered.

	Before.	Half Hour.	One Hour.	Two Hours.	Three Hours.
Combined chlorine,	·009	·2691	·2028	·1248	·0458
Free chlorine,	Trace	·0117	·2028	·1872	·312
Fixed chlorine,	Trace	·156	·1248	·1872	·1248
Total chlorine,	·0624 (·0312)	·4368	·5304	·4992	·4826

The combined chlorine falls continuously after the first half hour, due probably to the digestion and solution of the proteids, and the consequent preponderance of carbohydrates and insoluble material.

The solids, of course, are greater in quantity, as is the ash, the solids being in larger proportion at the hour than at the other times, the ash at the second hour.

Free HCl was present on all the occasions; lactic, acetic, and butyric acids absent, or only present in exceedingly small quantities. Mucin was detected before and three hours after breakfast.

Sugar, as tested by Fehling's solution, at 1 per cent. at the half hour, fell to ·6, then ·5 per cent., during the next two hours, and to zero in the third.

No alcohol reaction was observed.

It will be noted also that the stomach evidently had begun to empty by the third hour, in contrast to the former experiments, when the process of emptying did not occur until the fourth.

(*To be continued.*)

Part Second.

REVIEWS.

Edinburgh Hospital Reports. Published under the Supervision of the Editorial Committee of the Royal Infirmary, Royal Hospital for Sick Children, and Royal Maternity and Simpson Memorial Hospital. Edited by G. A. GIBSON, M.D., D.Sc., C. W. CATHCART, M.A., M.B., JOHN THOMSON, M.D., and D. BERRY HART, M.D. Illustrated with Coloured Plates and Engravings. Vol. I. Edinburgh and London: Young J. Pentland: 1893.

IT has been a matter of surprise that before now no hospital reports have been published with the distinctive sanction of the authorities of the Edinburgh hospitals. The hospital reports emanating from London are well known and appreciated; but Edinburgh men have, up to the present, not had in a collective form periodic reminders of the work done in their old *Alma Mater*. This does not mean that Edinburgh teachers have failed in the amount of original work which they have produced, but it has always been published in scattered periodicals. Indeed, the amount of work produced is so great that the editors of this volume have evidently had some difficulty in making their selection. One word of caution may be given here,—we hope that the editors will always insist upon publishing work which has not seen the light elsewhere. Even now a good many papers written by Edinburgh men get published in three or four different forms. We say this, as we hope that this first volume of hospital reports only commences a long series; and if subsequent editors do their work as well as the present ones, the series will take a high place with its contemporaries.

Fifty-seven papers of various lengths are included in this volume, and on the whole the various branches of Medicine and Surgery are well represented, although we do miss a few names which we should have expected to see as contributors.

It is impossible to call attention to each paper in such a long list, and it may be invidious, perhaps, to select any papers for special notice when all or nearly all have a high standard of merit. The historical papers—those dealing with the origin and growth of the various charities—have been entrusted to good hands, and Prof. Grainger Stewart, Dr Joseph Bell, Dr George Balfour, and Prof. A. R. Simpson have acquitted themselves well in their several spheres. Indeed, one is inclined to wish that even more had been written about the outstanding figures in the Edinburgh School. Anecdotes may perhaps be considered out of place in a scientific volume, but we could have gladly read more of "Dismal Jimmy" and others who have passed away, but have left a lasting mark on the teaching and traditions of the Edinburgh Medical School.

But we must proceed to mention a few of the other papers, and the first we would call attention to is that on Extra-auscultation, by Dr John Wyllie.[1] It is a very characteristic one, and well worthy of the place it occupies in the volume. It seems to recall those good old days, if one may be allowed to say so, when observation at the bedside was so well taught, and when the faculty of observation was so highly trained, and was untrammelled by many of our modern methods of investigation, which, we are afraid, to some extent cause our students to rely more on them than they should do. We do not mean to depreciate modern scientific investigation, but there certainly is a tendency to ignore semeiology. Hence Dr Wyllie's paper is opportune as well as instructive. Dr Bramwell gives a detailed account of a case of Acromegaly, which, apart from its interest, is a model for case-taking; and Prof. Fraser's paper on that rare condition, Xerostomia, accompanied as it is with a summary of recorded cases, is of value. The subject of Graves' Disease is dealt with by Prof. Grainger Stewart and Dr G. A. Gibson in a lucid manner, and they have drawn attention to several more unusual or less generally recognised symptoms in the disease. Post-mortem examinations were held in two cases, and they have no hesitation in believing the disease due to a morbid state of the nervous system, but careful investigation failed to discover structural alteration either in the sympathetic ganglia or nerves in the cerebro-spinal centres, with the exception of a small hæmorrhage on the floor of the fourth ventricle in one case, which they regard as probably accidental. Attention must certainly be called to the three papers by Prof. Gairdner, Dr R. W. Philip, and Dr G. A. Gibson, all dealing with disease of the tricuspid valve. Professor Gairdner relates the case in which, for the first time, tricuspid stenosis was diagnosed during life, and the diagnosis confirmed post-mortem. Gairdner did for the tricuspid valve what Fauvel did for the mitral. He has several times previously demonstrated the case by special request, but now for the first time the full report is published. The paper by Dr Philip brings into strong relief the possible latency of the physical signs in tricuspid stenosis; and Dr Gibson, in addition to reviewing the entire history of our knowledge concerning this lesion, presents a graphic picture of the clinical and pathological details in two well-marked cases. These papers will be read with extreme interest and profit.

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[1] Why not *τελάκουσις* or Telauscultation, "Hearing at a distance?"

There is a capital paper by Dr Joseph Bell on Five Years Surgery in the Royal Hospital for Sick Children, and a carefully written and valuable clinical and pathological report of a case of Cavernous Lymphangioma of the Subcutaneous Tissue of the Forearm by Mr H. J. Stiles. Drs John Thomson and A. Bruce publish a detailed account of a case of great rarity, namely, of Progressive Muscular Atrophy in a child of 4 years old. Dr George Mackay narrates a case of partial Homonymous Hemianopsia, showing complete hemiachromatopsia with transient attacks of hemierythropsia and hallucinations in the defective half fields of vision. Dr M'Bride has a good practical paper on the necessity of combining a consideration of the Objective and Subjective in Affections of the Throat, Nose, and Ear; and Dr James Carmichael gives a brief summary of forty-eight cases of Pleuritic Effusion.

The treatment of disease receives a good deal of attention, although by no means so much as is given to clinical and pathological subjects. The papers by several writers, such as Professor Fraser and Dr Bramwell on the medical, and Professor Chiene and Mr Cathcart on the surgical side, contain much valuable teaching with regard to the remedial aspects of their subjects. There are also in addition some useful contributions more especially devoted to therapeutics. Dr Felkin contributes a learned and practical article, full of suggestive thought, on the Therapeutics of Quinine; Mr Duncan has a paper, containing the results of much observation, on Surgical Technique; Mr Cotterill and Dr Miles give the results of special methods applied to surgery; and Dr Berry Hart discourses upon the means of repairing damages occasionally incidental during the natural processes falling particularly within his special province.

This leads us to observe that in the department of Gynæcology Dr Halliday Croom has an article upon Sessile Cysts, marked by the clinical acumen and practical leanings so characteristic of his writing and teaching.

We are sorry that we cannot, in the space available, refer to any other of the papers, all of which merit attention.

The statistical tables compiled by Drs Gillespie, Douglas, and Pirie, for the year ending September 30, 1892, are sufficiently elaborate, and are well drawn up.

The publisher can be congratulated on his work. The volume is well printed, and the illustrations are admirably produced, more especially the reproductions of the microscopical preparations. We confidently expect that the publication of this volume will prove to be successful, and we have no doubt that subsequent volumes will still further enhance the reputation of our School.

The Cardinal Symptoms of Urinary Disease. By E. HURRY FENWICK, F.R.C.S. Lond. London: J. & A. Churchill: 1893.

IN *Over the Teacups* Wendell Holmes describes the old-fashioned family practitioner, and grieves that in the near future, specialties and specialists having become more numerous, he may become extinct. Cystoscopy is a new specialty, and the work under consideration is by a specialist, who has elaborated, in a series of lectures to the students of the London Hospital, the symptoms in urinary diseases and their significance in the light of cystoscopic examination. The lectures were enlivened by the presence of patients illustrative of the various symptoms described, but we fear that the host of details which are found in the work must have been far from interesting to listen to, as, indeed, without the presence of patients they are most tedious to read. The book is one for reference rather than continuous reading, but should be of much assistance in cases of obscure genito-urinary disease.

The symptoms specially referred to are chiefly three,—hæmaturia, frequency of micturition, and pain. These are all treated in great detail; many points of importance are insisted upon by the author, and with most of his deductions we agree. The chapters on hæmaturia as a symptom are singularly good, and upon its value as a guide to diagnosis the author throws much light, and points to many sources of possible error.

It has been well said that our knowledge of vesical neoplasms is a modern product,—a result of cystoscopy; but Mr Fenwick gives the cystoscope a higher sphere, and in his work shows that our knowledge of genito-urinary diseases as a whole has been in many important parts much added to since the introduction of that instrument.

A perusal of this work will do much to dispel many erroneous views regarding the significance of various symptoms, and should, while pointing to the value of cystoscopic examination, have the effect which the author hopes for, as stated in the introduction, of making the practitioner independent of the cystoscope in many instances.

The style of the author is prolix, and the book is full of hyperbole; and although, no doubt, he has had large experience, mere dogmatic statement is not always convincing, and we feel that a quieter, more prosaic style than that adopted would, even in the lecture-room, be of greater weight, and prove more effective.

Atlas of Electric Cystoscopy. By Dr EMIL BURCKHARDT, Bâle, and E. HURRY FENWICK, F.R.C.S. Lond. London: J. & A. Churchill: 1893.

THE authors of this conjoint *Atlas*, the major part of which is by Dr Burckhardt, have both had large experience in electric cystoscopy, and the work is an important contribution to the subject. There are thirty-five plates with eighty-three figures, executed on much the same plan as figures illustrative of ophthalmoscopic appearances. It is only possible to show a small portion of the bladder in one figure, and as the bladder wall varies in its colour and the appearance of the surface at different parts, and with varying degrees of distention, it is practically impossible to have a definite standard of colour as a groundwork for the pathological condition depicted, and thus the value of the figures is considerably diminished. Further, the ratio in size of the disc and fundus of the eye is definite, while in the bladder no such ratio can be obtained. Notwithstanding these difficulties, the plan adopted seems a good one, and the authors have succeeded in presenting a series of valuable and instructive figures. It would be advantageous, however, if they would in a future edition tell the scale of the drawing, and explain the meaning of Cystoscopes I., II., and III.

Examples of tubercular ulceration, tumours, calculi, and foreign bodies are depicted, and although the figures vary in merit, some are excellent representations. Thus figures 1, 2, 3, and 5, showing the appearance at different parts of the normal bladder; 16*a*, from a case of chronic cystitis, the wall covered with muco-pus; and 24, a trabeculated bladder, are excellent. Tumours differ exceedingly in their appearance cystoscopically, but 35*b* shows a single villous from a villous papilloma, which is very characteristic. Figs. 31 and 32 do not convey a satisfactory idea of ulcers, and we feel the authors might have shown more typical appearances of ulceration than those they have selected.

The vividness of the figures and the detail which is shown is no exaggeration of what can be seen when the bladder is examined cystoscopically under favourable circumstances; and we believe the *Atlas* will prove most useful to those surgeons who use the cystoscope. The explanatory text is amply sufficient in most cases to elucidate the drawings.

Guide to Health in Africa. By Surgeon-Major T. H. PARKE. London: Sampson Low & Co., Limited: 1893.

AFTER giving a brief description of the African continent, its climate and meteorology, inhabitants, flora and fauna, which occupies the first sixty pages of the book, the author deals with the diseases of Africa in the following hundred pages. The *Guide* is evidently designed for travellers as well as residents in the country, and it contains useful hints upon the medical equipment required, upon personal impedimenta, cooking, the transport of the sick, disinfection, and embalming, and the remarks which are made are so good that we could have wished they had been somewhat expanded. And, indeed, the same remark applies to the whole of the book. We do not think that quite sufficient detail is given to enable the lay reader to carry out the treatment successfully in all cases, and we hope that Dr Parke will extend his matter in a second edition, which is sure to be called for. We think the author makes a mistake (p. 87) in recommending, as a precautionary measure to guard against malarial fever, the regular use of 5 grs. of bisulphate of quinine three or four times a day. Surely 5 grs. once a day would meet the case, and it is indeed doubtful whether even this dose should be taken for long periods. On page 133 there is probably a misprint—"bitharzia (*sic*) hæmatobia" being printed for filaria sanguinis hominis. With regard to the hypodermic injection of quinine recommended on page 132 in cases of snake bites, we think that the interval of three hours between the injections is far too long, at any rate with the dose recommended. The book can be cordially recommended, but the publisher should have chosen a different cover, the one selected being more suited for a drawing-room than for the rough and tumble of travel.

Hypnotism, Mesmerism, and the New Witchcraft. By ERNEST HART. London: Smith, Elder, & Co.: 1893.

MR ERNEST HART has republished the papers which appeared in the *Nineteenth Century* and the *British Medical Journal* on the subject of "Hypnotism, Mesmerism, and the New Witchcraft." The book is undoubtedly useful for the main object for which it has been published, namely, to unmask "a prevalent system of imposture which had imposed upon a good many journalists and men of literary culture." As might have been expected from such an author, the subject has been very cleverly handled, and we sincerely hope that the book will "serve a useful purpose in dissipating some popular errors and a good deal of pseudo-scientific superstition." Looked at, however, from the scientific point of view, we are disappointed in the work, for reading, may-be between the lines, there seems to run through it all a note of absolute disbelief in hypnotism, notwithstanding that the author apparently admits the truth of a "slender basis of physiological and pathological phenomena." A committee appointed to investigate the nature of the phenomena of hypnotism, its value as a therapeutic agent, and the propriety of using it, by the British Medical Association, report that "they have satisfied themselves of the genuineness of the hypnotic state," and there can surely be no doubt that hypnotism is a power which can be used for good or ill; also that it is not alone hysterical or mentally affected individuals who are subject to its power. Speaking of the production of hypnotism, and saying that it is independent of passes or gestures, etc., Mr Hart says, "We can transmit the order to sleep by telephone or by telegraph; we can practically get the same results while eliminating even the operator, if we contrive to influence the imagination or to affect the physical condition of the subject by any one of a great number of contrivances." This is quite true, but being true it proves the existence of the hypnotic state; for how did the ideas arise in the mind of the patients, and what was it that was sufficient to influence the circulation in the brain of the person operated on? Mr Hart does not clearly inform us, and the non-success of his experiments cannot prove a negative. The production of phenomena or the simulation of phenomena in one way does not negative their production in another. In dealing with this subject it is necessary to do so on scientific lines, and it is impossible to expect phenomena to be produced without the presence of the circumstances which tend to produce them. We know perfectly well that if a prepared plate be put into a photographic camera and exposed to the light, and subsequently developed in a dark room, a picture will be produced; but a sceptic might say, that if photography were true the image should appear upon the prepared plate without the camera and other apparatus. The author says, "A clever hypnotiser means only a person who is acquainted with the physical and mental tricks by which the hypnotic condition is produced; or sometimes an unconscious impostor who is unaware of the very trifling part for which he is cast in the play, and who supposes himself really to possess a mysterious power, which, in fact, he does not possess at all, or which, to speak more accurately, is equally possessed by every stock or stone." This cannot be true; every stock or stone does not possess the power unless and until a previous suggestion has been made to a patient that the stock or stone possesses it.

We are perfectly ready to admit with the author the dangers of hypnotism, but is it really necessary to admit them if we view the subject of hypnotism as the author apparently does?

Borderland: A Quarterly Review and Index. Vol. I., No. 1, July 1893. Edited by W. T. Stead.

NOTWITHSTANDING that this new review has *not* been sent us for review, we call attention to it because we hold it to be the duty of every medical man to make himself acquainted with it.

It is indeed a sign of the times that such a publication should see the light, and we are bound to say that we cannot approve of it. That "there are more things in heaven and earth, Horatio, than are dreamt of in our philosophy" we know, but it does not follow that all and sundry are either physically or mentally qualified to investigate the *Borderland*. Of course, Mr Stead would reply to this, that it is professional arrogance and bigotry which influence us in taking up this standpoint. Still, we strongly hold it, and we deem it to be the duty of every right-thinking practitioner of medicine to set himself boldly against all tampering with such investigations. It is maintained by many that the evils resulting from such investigations as those proposed, while regrettable in themselves, are justifiable. We find Mr G. Rayleigh Vicars, M.A., writing Mr Stead as follows:—"To those on the borderland of insanity spiritualism may bring much evil, but, of course, it is impossible to avoid the abuse of everything in this world, and the compound of organic chemistry we call alcohol is the most potent for evil of all the accessories of civilisation. Yet it is very freely used to the ruin of the body, to the degradation of the soul, to the paralysis of the brain, and a constant source of expense to the community in filling our asylums, our hospitals, our prisons. Compared to spiritualism it is a demon of hell. Yet we tolerate it, even laugh at it, and very many thousands daily wallow in the gutter obedient to its insensate tyranny." Is it, however, necessary to raise a new demon? for however lightheartedly this pursuit is entered into, once the first step is taken it is well-nigh impossible to go back, and the records of the Middle Ages prove up to the hilt how subtilely fascinating, how morally degrading, and how soul-destroying tampering with magic is sure to prove. This subject must be regarded from an all-round point of view. Looking at the replies which Mr Stead has received to his circular to the leaders of thought in Great Britain as to his proposed investigations of occultism, there are many things to surprise one. Although it is true that there are many words of warning uttered, yet, take the bishops of the Church of England, they seem to fail to appreciate the gravity of the situation; they do not seem to know that thousands are undertaking occult studies of various natures. Nonconformist leaders, like Dr Paton of Nottingham and Dr Reynolds of Cheshunt, seem to realize the danger, but they do not strenuously oppose the investigations. Roman Catholics, on the other hand, vigorously condemn them. We cannot mention others, but there seems to be a marked tendency, with one or two notable exceptions, in those who have replied to Mr Stead's circular, to countenance his venture and to wink at the evil results which are sure to follow.

The subject cannot be ignored by the medical profession. It will not do for them to say, as does Lord Kelvin, "I have nothing to do with *Borderland*, I believe that nearly everything in hypnotism and clairvoyance is imposture, and the rest bad observation," and to lay themselves open to Mr Stead's taunt, "this oracular dictum will probably live in the history of the progress of mankind side by side with the equally positive assertions of the Lord Kelvins of their day in condemnation of Galvani, the frog's dancing master, and of Harvey, whose discovery of the circulation of the blood exposed him to the ridicule of the leading scientists of his time." The attitude which they, if more wise, would take up is a very different one. They must face the facts, which are daily being substantiated, of the existence of occult powers and psychical phenomena, so as to be able to cope with the new difficulties which arise, and with which they will have to deal in the near future. Physicians must be in the forefront of the fray, unless they wish to see our lunatic asylums overfilled by "fools having rushed in where angels feared to tread."

Various Forms of Hysterical or Functional Paralysis. By H. Charlton Bastian, M.A., M.D., F.R.S., Fellow of the Royal College of Physicians, President of the Neurological Society of London, etc., etc. London: H. K. Lewis: 1893.

Four lectures published in the *Lancet* during last year are here further developed, while three papers dealing with the scientific foundations, on which the author has built up his well-known theories, are added in the form of appendices. Although published under the title of Hysterical *or* Functional Paralysis, Dr Bastian in the text argues strongly in favour of a more general use of the word functional and of a narrower interpretation of the term hysteria. The word "functional" would then be applied to all those diseases of the nervous system the causes of which can neither be discovered macro- or microscopically. Such a definition would naturally include all hysterical affections due to "perversion of certain brain functions" (Charcot), and would also be applied to non-hysterical cases, although Dr Bastian is not quite certain if "functional" is the best word to use in this wider sense (*cf.* footnote, p. 120). Apart from the mere interest of the individual cases so carefully detailed in this volume, the general aim of the author has evidently been to support his theory or "notion," as he prefers to call it, with regard to the nature and function of the so-called "motor areas." He holds, as is well known, that the Rolandic areas of the cerebral cortex are not pure motor centres, which *per se* can initiate movements, but form rather *Kiniesthetic* areas, areas devoted to the "sense of movement," movement memory centres, deletion or degradation of which leads to loss of purposive movements in the corresponding parts of the body. These centres, stimulated by afferent sensations, would transmit the signals for the necessary and called-for movements to the real motor centres in the lower centres, probably those in the base of the brain.

A Discourse on Capillary Bruit. By Brojo Nath Shaha, L.M.S., Assistant Surgeon, Bengal Establishment Aunganiati. Calcutta: M. L. Patha, at the Kahinoor Press: 1892.

The author of this pamphlet has been for seventeen years continuously in the Lushai district. He has never had the pleasure of being present at any meeting of a medical society. Of a sudden, on Friday, November 13th, 1891, he made a great and up till now unpublished discovery. He heard or felt a buzzing in his ears, especially when they were stopped by the points of his fingers. By counting the buzz he made out 56 beats in 10 seconds; his friend Gopal Chundra Ghose, of the Telegraph Department, with his keen perception, arrived at 330 beats per minute. The speed, therefore, of the capillary pulse is four-fold that of the arterial, and that notwithstanding that the space to be filled by the same volume of blood is very much greater in the capillaries than in the arteries. Further comment is needless.

Ueber das Volumen der rothen und weissen Blutkörperchen im Blute des gesunden und kranken Menschen. Von Med. Dr JUDSON DALAND, Instructor an der medicinischen klinik der Universität von Pennsylvania; Primärarzt des Universitätshospitals, Philadelphia. Aus der medicinischen klinik des Prof. R. v. Jaksch, Prag. Separat-Abdruck aus "Fortschritte der Medicin," October 1891.

THIS pamphlet, which has been sent to us nearly two years after publication, is a successful attempt to throw discredit on the method for the counting of blood-corpuscles commonly in use. Dr Daland and Herr Regimentsarzt Dr Carl Sadler counted the same specimens of blood with the same appliances, and found errors reaching at times to the enormous sum of 1,381,250 in the estimation of less than 5,000,000 red corpuscles. In the different enumerations, now Dr Daland, now Dr Sadler, estimated the larger number. The alternative plan advocated by the author is the use of a centrifugalizing machine called a "Hæmatokrit." After many experiments, a 2·5 per cent. solution of bichromate of potassium was found to be the best fluid for diluting the blood. Ten to twenty thousand revolutions of the instrument were given, and the volume of red blood-corpuscles calculated. The minor details must be obtained from the paper itself. The results seem very trustworthy.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXII.—MEETING IX.

Wednesday, 7th June 1893.—Mr JOSEPH BELL, *President, in the Chair.*

I. EXHIBITION OF PATIENTS.

1. *Dr W. A. Finlay* showed a case of RUPTURED KIDNEY. Recovery had taken place after drainage by a lumbar incision.

2. *Dr James Carmichael* exhibited a BOY, aged 7, who had been under treatment in the Royal Hospital for Sick Children on account of bronchitis following an attack of measles four months ago. On admission he was found to be suffering from chronic bronchitis and emphysema. Physical examination showed the heart to be on the

right side. The apex-beat was in the fifth interspace, just internal to the vertical line of the right nipple. The transverse line of cardiac dulness measured about 2½ inches, the absolute dulness little over an inch. Neither the liver nor spleen were palpable. There was no dulness in the right hypochondrium anteriorly, but posteriorly there was an area of dulness below ninth rib, extending across from the spine to the posterior axillary line, measuring vertically 2½ inches. On the left side anteriorly dulness could be made out, extending transversely in the left hypochondrium from the costal margins to the anterior axillary line. It was obviously difficult to determine the exact position of liver and spleen. Judging from the extent of the dulness on the right side posteriorly, there seemed to be sufficient cause to suspect the possibility of the liver being in that position ; on the other hand, there was a considerable area of dulness on the left side corresponding to the splenic area, and it seemed not unlikely that the liver occupied this position. In transposition of the heart it most frequently happens that the other viscera are misplaced, but this does not always obtain. M. Breschet has recorded four cases of heart displacement in which the other viscera retained their normal positions. There was no indication of irregularity or malformation otherwise of the blood vascular system. The patient did not suffer in any way from circulatory embarrassment. At times a faint systolic murmur was audible at the apex.

3. *Dr Byrom Bramwell* showed the case of PSORIASIS which was exhibited at the Myxœdema Meeting of the Society. The patient was now quite well, the eruption having entirely disappeared under the administration of thyroid extract. The President and gentlemen who were present at that meeting would remember that the case was typical and severe. (A photograph showing the condition of the patient on admission to hospital was shown.) Within six days after the treatment was commenced large scales began to be detached from the surface of the body. During the earlier periods of the treatment the patient was kept in bed. No medicines were given internally, and no local treatment employed. The result was very remarkable, and seemed to be entirely due to the thyroid extract. Dr Bramwell stated that he had some other cases under treatment which he hoped to bring before the Society at a future meeting.

4. *Mr Alexis Thomson* showed a case of SYRINGOMYELIA.

II. Exhibition of Specimens.

Professor Struthers showed specimens of APPENDIX VERMIFORMIS.

III. Exhibition of Instruments.

Mr Charles W. Cathcart showed a CASE OF MINOR OPERATION INSTRUMENTS of his own designing, which had the following features :—The knives, aneurism and pile needles were separate from the two handles, on to which they fitted by a simple ring catch. This catch was quite secure, and yet it could be removed and put in position at a moment's notice. The blades and needles were provided with a rack, into which they may be easily slipped, and which holds them against all reasonable shaking when the fixing bar is placed across them. The same rack is made to hold, besides the knives and needles and their two handles, a pair of dissecting forceps, two pairs of pressure artery forceps, a pair of scissors, probes, a director, two or three suturing needles, and two spatulæ. The box and its lid serve for trays in which the instruments can be laid during an operation. The box, the rack, and every part of the instruments are designed so that no crevices exist which cannot be easily wiped clean. The instruments and case have been made by Mr Young, to whom Mr Cathcart is indebted for the care taken in carrying out his suggestions.

IV. PATHOLOGICAL REPORT.

Dr Russell reported as follows on Dr Abernethy's SPECIMEN on behalf of Professor Greenfield and himself:—

We have examined the sections (two in number) from this case, and said to be sections of the whole thickness of the intestinal wall. We find that a considerable part of the thickness of the section is composed of an epithelial structure in which there are many tubular spaces lined with columnar epithelium, and frequently arranged in the form often seen in intestinal polypi. The epithelial cells show little or no sign of degeneration. The general arrangement corresponds with that met with in villous polypi. Upon the surface of this is a granular mass in which traces of degenerated cells may be seen. Beneath it is a similar material somewhat more laminated and fibrinous; in this part there is no trace of the normal structures of the intestine. This deeper part corresponds in appearance with what is frequently seen in the deeper parts of a croupous exudation on a mucous surface. We have no hesitation in saying that had the section comprised other tissues of the intestinal wall some of them would have remained equally or more distinct than the epithelium.

W. S. GREENFIELD.
22nd February 1893. WM. RUSSELL.

The two additional sections show a somewhat different condition from that described above, especially in the fact that the epithelium which remains intact is arranged for the most part as if on a free surface. But the examination of these specimens has in no way changed our view that the sections do not either in structure or arrangement correspond with those of the intestinal wall. We do not feel called upon for any further expression of opinion.

W. S. G.
W. R.

Dr Abernethy asked the following questions:—If a polypoid growth or mucous cast, how was it that the specimen assumed the form of a hollow cylinder of uniform thickness and caliber corresponding to those of the normal small intestine? *Second*, If not the muscular coat of the bowel, what was the nature of the layer seen in the section, which was of the thickness of that coat of the intestine, contained in its substance muscle neuclei, and showed two distinct divisions, one composed of bundles cut longitudinally, the other of bundles cut transversely?

V. Original Communications.

1. *Dr Templeman* read his paper on STRANGULATION AND HANGING, which appears at page 207 of this Journal.

Dr Littlejohn said he thought that Dr Templeman deserved great credit for collecting and giving to the profession the cases of which he had given an account. He thought, however, that sufficient importance had not been attributed to the preliminary cerebral congestion, which accounted, in his opinion, for the flaccid appearance of the face in cases of suicide by hanging. The venous congestion of the brain caused failure of the muscular power and unconsciousness, and afterwards asphyxia closed the scene. There was not the same agony as in death from pure asphyxia, which, of all forms of death, was probably the most fearful. Regarding the case of judicial hanging from which Dr Templeman had shown the cervical vertebræ, it could not be said to be one of death by asphyxia, as the cord had evidently been divided. In one case which he had observed, the cord was completely separated, and the heart stopped at once. In another, in which the cord was not divided, the heart continued to beat for twenty minutes. In cases of suicidal hanging, where commonly asphyxia only came in latterly, the larger amount of dark blood was found on the right side of the heart. In death by strangulation, on the other hand, where the asphyxia had to be complete in order to prevent struggling on the part of the victim, there was a distended condition of the right side of the heart and emptiness of the left.

Professor Struthers asked if it was not the case that in hanging with the long drop death was instantaneous?

Dr Littlejohn said he always thought so until he saw the case he had referred to, in which the heart continued to beat for twenty minutes.

Mr Cathcart asked if it was not possible to kill a person very rapidly in the way spoken of by Dr Littlejohn by gripping the carotids on both sides without touching the larynx at all?

The President said that, regarding Mr Cathcart's question, when he was a resident in the Royal Infirmary, one of the physicians had a theory that certain forms of headache could be cured by pressing the carotids. In experimenting on each other on one occasion, one of the residents was nearly killed in this way. Artificial respiration had to be done before he revived.

Dr Templeman, in replying, said that in his case of judicial hanging death was certainly not from asphyxia, because, as Dr Littlejohn had pointed out, the cord was completely ruptured. The pulse had ceased to beat when examined very shortly after the drop. On post-mortem examination the case presented the rare condition of the heart being completely empty. He thought that in cases of garroting death might occur in the way Mr Cathcart had mentioned.

2. *Mr Caird* read NOTES ON A CASE OF GASTROSTOMY, which appear at page 205 of this Journal.

The President asked if he had ever had any poisoning effects in doing such operations under cocaine?

Mr Caird replied that he had never once.

Mr A. G. Miller explained that the case had been under his care for a time before the ward in which the patient lay was taken charge of by Mr Caird in his absence. Dilatation of the stomach and stricture at the pyloric end were diagnosed, as well as the constriction at the cardiac end. He wished to operate, but the patient would not at the time allow any operation to be done.

Mr Caird replied.

3. *Dr Robert Fleming* read SOME NOTES ON TWO CASES OF CANCRUM ORIS, which appear at pages 220 and 228 of this Journal.

Mr A. G. Miller said he would like to mention some of his surgical experiences of noma. His first case he treated in the usual way by excising all the apparently diseased tissue and afterwards applying fuming nitric acid freely. The child, however, died. Last summer he had seen a girl of apparently 12 or 13 years of age operated upon for noma in one of the hospitals in London. First of all the whole of the diseased area and a considerable portion of healthy tissue round it were completely removed, leaving an enormous gap in the cheek, opening into the mouth. This demonstrated that the diseased tissue was more extensive internally than externally. Then the operator removed with scissors everything that seemed in the least diseased. A considerable portion of the lower jaw was laid bare. A Volkmann's spoon was then very thoroughly applied all round. About three inches of the lower jaw were next removed, and also a portion of the upper jaw. After that pure carbolic acid was applied to all the raw surface. Then the whitened necrotic tissue was thoroughly scraped again, and finally a strong solution of corrosive sublimate was applied, and an antiseptic dressing put on. The operator was not one of the younger surgeons, but Sir Joseph Lister. On making inquiry a week later he ascertained that the child was recovering. The parts were cicatrizing, and a plastic operation was soon to be done. He thought that the explanation of the success of this operation was to be found in what Dr Fleming had referred to, namely, that the organism which caused the disease was beyond the sloughing portion. It was also important to remember that the disease was usually more extensive internally than externally.

Dr James Carmichael said the case of his which Dr Fleming had referred to was practically, so far as the primary disease was concerned, cured by Nature alone by the time it came under his care. The necrotic condition had stopped. In addition to the destruction of the soft parts the upper and lower maxillary bones were completely necrosed. The patient when admitted to the hospital was dying of pure asthenia, but under feeding by means of the tube soon began to improve. The upper maxillary bone had to be removed as well as a portion of the lower. The wound healed up perfectly in every way. The patient was seven years old. The disease occurred after typhoid.

Dr Fleming, in replying, said that the bacilli in Dr Coats' specimen, kindly lent to him, were longer and their ends squarer than those in Dr Elder's specimen. Stanley, in his travels in Africa, had found that the dwarfs used for their arrow poison a peculiar material made mainly of soil, and those struck by it died either of tetanus or gangrenous spreading patches closely resembling if not identical with noma.

4. *Mr C. W. Cathcart* read a NOTE ON THE QUENCHING OF THIRST AFTER ABDOMINAL OPERATIONS, which appears at page 250 of this Journal.

Mr A. G. Miller said it was some years since he had first used this method of quenching thirst. Mr Cathcart's paper brought up the whole question of rectal feeding, and whether the fluid should be placed in the rectum, which was not a very actively absorbing part of the bowel, or thrown into the colon, where it would be more likely to be retained and absorbed. That a patient could not swallow fluid was certainly no reason why he should suffer from thirst, because fluid could be given by the rectum. He recommended that a large quantity should be injected at once instead of small quantities frequently, as Mr Cathcart had advised. The fluid then reached the colon and was more rapidly absorbed.

Dr N. T. Brewis said that it was the experience of most surgeons that injections of fluid into the rectum relieved thirst. He had practised this method for some years, and could therefore corroborate Mr Cathcart's paper. He recommended also for the thirst that followed abdominal operations the administration of calomel. He gave six grains and then four grains every three hours until flatus was passed. Such doses did not salivate to any extent, but rendered the mouth more moist.

Mr Alexis Thomson said he was in the habit of using the method.

Mr C. W. Cathcart, in replying, said that in spite of what had been stated he was still of opinion that this method of quenching thirst which he had been recommending was not generally known by operators in abdominal surgery. His object in giving small quantities was to avoid peristalsis, and he still thought that this was the better plan.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LIV.—MEETING VIII.

Wednesday, 29*th June* 1893.—Prof. A. R. SIMPSON, *President, in the Chair.*

Dr J. C. Webster read his communication entitled EMBRYOLOGICAL STUDIES IN TUBAL GESTATION.

Drs Berry Hart, Lovell Gulland, J. W. Ballantyne, Wm. Fordyce, and the President took part in the discussion, and Dr Webster replied.

SESSION LIV.—MEETING IX.

Wednesday, 12*th July* 1893.—Prof. A. R. SIMPSON, *President, in the Chair.*

I. *Dr. J. W. Ballantyne* exhibited frozen sections and drawings of an ANENCEPHALIC FŒTUS WITH SPINA BIFIDA IN THE CERVICAL REGION. This was the fourth specimen of anencephalus which he had examined by the sectional method, and it had been kindly given him for the purpose by Dr James Smith. The fœtus was born on October 3rd, 1892. The mother was a vii.-para; four of her children were alive, two had died from scarlet fever, and that fever had affected members of her family during her seventh, the present, pregnancy. Her abdomen was so greatly distended that Dr Smith expected a plural gestation,—twins, and possibly triplets. The membranes presented as a bag, and when they had been ruptured artificially twenty-seven pints of liquor amnii escaped. There was therefore enormous hydramnios, which accounted for the large size of the abdomen. The presentation was a footling, and the cord was short and twisted once round the thigh. The fœtus was alive during labour, for the limbs moved, but it was still-born. Pregnancy was nearly at the full time. The placenta was small, but was normal in appearance. The fœtus, a female, had all the external characters of typical anencephaly. It measured 39 cms. in length from vertex to heel, whilst from vertex to symphysis pubis was 23 cms. Of course, from the absence of the cranial vault, the so-called vertex was really the exposed basis cranii. The circumference round the head was 22 cms.; round the shoulders, 34 cms.; round the thorax, 27·5 cms.; and round the abdomen, 26 cms. The external ears were deformed, and projected outwards from the head. The eyes were staring and directed upwards, and there was an indication of a neck anteriorly. A mesial vertical and a left lateral vertical section were made. All the vertebræ were present; but the cervical members of the series were directed backwards beneath the basis cranii, and had their spinal canal open. The basis cranii looked backwards as well as upwards, whilst the posterior part of it, the basi-occiput, ran vertically downwards, and seemed on section to be the body of a supernumerary vertebra. The spinal cord was present in the dorsal and lumbar regions. There was blood in the mouth and œsophagus, and in the pericardial sac. There was no trace of a cranial vault. The parts in the region of the neck showed the usual displacement.

Dr J. W. Ballantyne made a FURTHER STATEMENT WITH REGARD TO THE INFANT WITH A BIFID HAND which he had shown to the Society at its meeting in November 1892. It would be remembered that he had then described the elbow-joint as larger than that of the opposite side, and had expressed his opinion that there was some anomaly in the lower end of the humerus, and also in the radius. He had recently had a letter from Professor Thomas Dwight, along with a reprint of his paper on "Fusion of Hands" (*Memoirs of the Boston Society of Natural History*, vol. iv. No. 10), and in this paper a very similar case was described and an account of the dissection given. In it there was no radius, but two ulnæ. The ulnæ articulated by means of two olecranons with the lower end of the humerus, which was also double, consisting of an internal condyle on each side and two fused external condyles in the middle line. Dr Dwight had written to say that he believed a similar state of things would be found to exist is his (Dr Ballantyne's) case, and from a re-examination of the patient he was convinced that Dr Dwight was right. It was, therefore, truly a case of double hand and forearm, with absence of the radiuses and their digits.

II. *Dr Brewis* showed the FŒTUS and PLACENTA of an extra-uterine gestation, removed by abdominal section.

III. *Dr J. W. Ballantyne* read his Studies in Fœtal Pathology and Teratology: ALLANTOIDO-ANGIOPAGOUS TWINS—Paracephalus Monopus, Apus, and Pseudo-acormus, which will appear in a future number of this Journal.

The President thought Dr Ballantyne was to be congratulated on having been able to pursue his studies in Teratology to such good purpose. The series of observations would add greatly to the value of the Society's *Transactions*, and render the volume for this year a mine of information in this interesting field of research for all coming time.

IV. *Dr Brewis* read his note of a case of SUPPURATIVE PAROTITIS FOLLOWING REMOVAL OF UTERINE APPENDAGES.

V. *Dr C. C. Easterbrook* communicated his METHOD OF INVESTIGATION OF AN OBSTETRICAL CASE, especially for hospital practice.

VI. The Report of Royal Maternity Hospital for Dr Underhill's Quarter (May to July 1892), by Drs A. C. E. Gray and Claude B. Kerr, was held as read.

VII. The Report of Royal Maternity Hospital for Professor Simpson's Quarter (1st November 1892 to 31st January 1893), by Drs C. C. Easterbrook and W. P. Simpson, was held as read.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

Aspidospermine in Dyspnœa.—Bardet (*Revue Internationale de Bibliographie Médicale,* April 10, 1893) has made some clinical studies of quebracho aspidosperma in the treatment of dyspnœa. The plant aspidosperma occurs in commerce in a number of forms, and it is uncertain as to which is the proper form to employ. It very distinctly increases the fulness of the movements of respiration, slows the heart, and depresses the temperature. The blood of animals poisoned by it becomes red. Bouchard has found the drug very valuable in the treatment of ordinary functional dyspnœa. The dose is from ¼ to ½ grain, or even as much as 1 grain, or a solution may be given hypodermically as follows:—Aspidospermine, 3 grains; water, 3 drachms. To this solution may be added a small percentage of sulphuric acid to maintain its solubility, and the acid may be neutralized at the moment of injection with a little bicarbonate of sodium. Fifteen drops of this solution is the ordinary dose for hypodermic use.—*Therapeutic Gazette,* June 15, 1893.

Salophen.—Gerhardt (*Inaug. Dissert.*, Jena, 1893), after giving a description of salophen, which chemically consists of 50·9 per cent. salicylic acid and 49·1 per cent. acetyl paramidophenol, refers to its insolubility in water, tastelessness, and the fact that it is again reduced to its two component factors by the action of the pancreatic and intestinal secretions. If given in large quantities, the unaltered salophen is excreted with the fæces and by the skin, where its presence in smaller crystals has been demonstrated. As regards its medicinal action, the joint experiences of Guttmann, Trohlich, Flint, Hitschmann, and Koch tend to show that in acute rheumatism it is equal to salicylic acid, and preferable on account of its tastelessness. The author watched its action in sixteen consecutive cases, and noticed a decided effect when given in quantities of 1 to 1½ drachms daily, and in acute cases; on the other hand, relapses and rheumatism in fresh joints supervened frequently, but these generally again yielded to the fresh use of the drug. The possibility of endocarditis is not excluded by its use. The advantages were its absolute harmlessness and the absence of excessive perspirations or tinnitus. It is well borne by the stomach, causing neither sickness nor loss of appetite. Less efficacious it was found to be in cases of some weeks' standing, and in chronic cases it was no more successful than other drugs. Salophen is, therefore, particularly indicated when gastric sensitiveness is present, when other drugs have failed, or when, as in children and others, the use of salicin, etc., is contra-indicated on account of its unpleasant taste.—*British Medical Journal*, July 1, 1893.

Action of Chaulmoogra Oil on the Leprosy Bacillus.—Oro Mario (*Monats. f. prakt. Derm.*, No. 6, 1893) treated a patient suffering from mixed leprosy with chaulmoogra oil, increasing the dose to 100 drops daily. The treatment had to be discontinued on account of intolerance, but it had an extraordinarily favourable effect on the disease. Blood extracted from the tubercles when the treatment was begun showed numerous characteristic bacilli, but after the treatment they disappeared, the place of the bacilli being taken by finely granular formations enclosed in zooglea masses. The author considers that this result was produced by the destructive influence of the oil on the leprosy bacillus, and that it explains the favourable action of the remedy in that disease.—*British Medical Journal*, July 1, 1893.

Treatment of Diphtheria with Chloride of Iron.—Dr E. Hübner and Dr N. Rosenthal (*Therapeutische Monatshefte*, December 1892) write in separate articles of the use of chloride of iron for diphtheria, as recommended by Kehn. Dr Hübner treated fifty-two cases with it, losing only two, although six other patients had the disease with such severity that he could not have hoped to save them with any of the remedies formerly used. He had the throat painted twice daily, and in very severe cases three times, with a solution of 4 equal parts to 1 part in 5. He also made use of frequent sprinkling of the throat with weakened lime-water, of ice pellets, and an ice bandage about the throat. Dr Rosenthal tabulates seventy-nine cases of undoubted genuine diphtheria treated by him. The patients came under his treatment early, and remained until the disease was over. Only seven, or less than 9 per cent., died, and the good results must be ascribed to the remedy.—*Therapeutic Gazette*, May 15, 1893.

Methylene Blue in Diphtheria.—Kasem-Beck (*Centralbl. f. Klin. Med.*, 25, 1893) has in fourteen cases of diphtheria used aqueous solutions of methylene blue (1 to 9). The application was made two or three times daily by means of a tampon, the membranes rapidly showing saturation with the colouring agent. The success was very marked, and is attributed by the author both to the local and general action of the drug. In addition, minute doses of pilocarpin were administered, in order to assist the separation of the membranes.

The pyrexia and local œdema rapidly subsided, no local irritation was produced, and no unpleasant symptoms resulted, though the assimilation of the drug was proved by its presence in the urine. All cases recovered, three becoming complicated with slight forms of paralysis.—*British Medical Journal*, July 15, 1893.

THE EFFECT OF HYPODERMIC INJECTIONS OF BORAX IN ACUTE PNEUMONIA.—In one of the Polish journals Dr Runeberg gives a report of five cases of acute pneumonia treated by the hypodermic injection of borax in the medical clinic of Helsingfors, and claims a marked modification in the duration and progress of the disease (*Revue Internationale de Bibliographie Médicale*, April 10, 1893).—*Therapeutic Gazette*, June 15, 1893.

THE HYPODERMIC INJECTION OF ICHTHYOL.—Damiens, in a Paris thesis, highly recommends the employment of ichthyol hypodermically, and states that it possesses under these circumstances analgesic properties, as there is, in addition to the absorption of the swelling, a suppression of the pain. Particularly is this of value in cases of neuralgic pains associated with inflammatory processes which have caused exudations. It is hardly necessary to add that hypodermic injections of ichthyol are not equal in analgesic power to hypodermic injections of morphine, but they are very much more innocuous (*Revue Internationale Bibliographie Médicale*, February 10, 1893).—*Therapeutic Gazette*, June 1893.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

FURTHER OBSERVATIONS ON THE TRICHOPHYTON MEGALOSPORON. —M. Sabouraud has continued his interesting researches into the subject of the varieties of the parasites of ringworm. Finding that the trichophyton with small spores preserves, on the whole, a unity of type, he has specially directed his attention to the trichophyton with large spores,—that, relatively, least frequent in cases of ringworm of the head in children, but according to him constantly present in tinea of the body, and in tinea barbæ. He finds that this trichophyton megalosporon is not a single species, but includes very numerous varieties, specifically distinct. Some of these can be distinguished by the clinical aspect of the disease, but all when the artificial cultivations are examined and compared. Several of the domestic animals are liable to be affected with various species of this variety, and thus to communicate them to man. At the same time it is only in secondary characters that the differences are found, for all seem to belong to a single botanical family. He defines this family as follows:—The trichophyton megalosporon is that which in the hair is characterized by round spores 7–8μ in diameter; in cultures sown in beer wort, by an adult colony presenting a powdery surface, with a periphery surrounded by branching rays. He believes that on the scalp the trichophyton of the horse is characterized by a patch of deep dermatitis,—the lesion, in fact, known as kerion celsi. Similarly the trichophyton of the cat spreads over a surface larger and less distinctly circumscribed than the preceding, associated with a marked dermatitis, which is finely vesicular and presents the appearance of a burn. The article concludes with a full description of the species isolated.—*Annales de Dermatologie et de Syphiligraphie,* Fevrier 1893.

Xanthoma Tuberculatum.—Dr Prince A. Morrow relates an example of xanthoma multiplex presenting very peculiar features, and much improved by a new mode of treatment. The disease affected a man of 45, and showed itself first in the spring of 1889 by severe pain in the sole and at the outer side of the right foot; after lasting for three months it began in the heel of the right. Seven months subsequent to the first appearance of the pain small hard nodules formed underneath the skin on the soles, which became inflamed on pressure, and discharged thin yellowish matter and blood. The pain continued, accompanied by burning sensations and stiffness, so that he could scarcely stand or walk. Similar nodules in course of months came on the knees and back of the left hand, but such were not painful, and those on the hand spontaneously vanished. When seen by Dr Morrow in October 1892, there was a grouped eruption of pale yellow nodules suffused with red, like brick-dust, due to an unusual development of minute telangiectases over the growths. Their consistence in all situations was exceedingly hard and shotty, due probably to a great development of connective tissue elements. Though unable to walk, his general health was good; there was no evidence of biliary derangement, no sugar or bile in the urine, no icteric tint, nor was there any history of disorder of the liver. Examination of an excised growth proved it to be of xanthomatous nature. Great improvement, and the disappearance of many of the growths, has followed the application of a 20 per cent., and latterly of a 25 per cent. salicylic plaster to cause disintegration or shelling out of the nodules, followed by dressing with diachylon plaster. At the same time it would be premature to pronounce that the removal of existing growths is equivalent to a complete and lasting cure.—*Journal of Cutaneous and Genito-Urinary Diseases,* January 1893.

Chrysophanic Acid in Lupus Erythematosus.—The treatment of lupus erythematosus is in many cases so disappointing that any fresh suggestions will be hailed with satisfaction when coming from well-authenticated sources. Mr Hutchinson states that for the last two years he has frequently employed weak ointments of chrysophanic acid, and has, on the whole, been much pleased with the results. He uses an ointment of the strength of five grains to the ounce, with directions to apply it sparingly. In the instances which he cites, the first effect was to make the patches much less conspicuous by imparting a reddish-brown hue to the whole face. When this subsided, which it did quickly, the patches were almost gone. He has had several cases of absolute cure, nothing being left but very faint scars.—*Archives of Surgery*, April 1893.

USE OF STRONG SOLUTIONS OF TAR IN ECZEMA.—The employment of tar in eczema may almost be called the crux in treatment. When and how to use it successfully is the touchstone of skill. It is probable that not only do skins react differently to tar, but the individual tars themselves act with varying energy. Mr Hutchinson says that he has on many occasions strongly advocated the use of tar washes as being by far the best remedy for almost all forms of eczema. His favourite combination is a preparation of tar in the form of liquor carbonis with solution of acetate of lead. A teaspoonful of each of the solutions named to a pint of water is a very common prescription; but it requires to be used not only as a wash, but to be kept constantly applied on lint. While it seems to succeed best, as a rule, in a dilute form, it is occasionally better to use it very much stronger, applied to the affected parts for only a few minutes at a time. Pruriginous affections are often relieved by the undiluted liquor carbonis. It stings at the moment of its application, but it stops the itching, and does not cause smarting afterwards. This solution of coal tar appears to be less directly stimulating than the tars distilled from fresh wood.—*Archives of Surgery*, April 1893.

SOME CONSIDERATIONS ON THE TREATMENT OF CUTANEOUS MALIGNANT EPITHELIOMATA.—Dr A. R. Robinson of New York, whose histological studies on many dermatological subjects are well known, has taken up the question of the treatment of certain cancers. He does not express his adhesion either to the view of Cohnheim, or to the parasitic or to the neurotic theory of origin. He notes, however, as bearing against the parasitic, that in secondary tumours it is probable that the epithelium has its origin from the epithelium of the primary one by a direct travelling through the lymph channels of solid bodies, the products of epithelial proliferation at the primary seat. Yet the mass composing the epithelium of the secondary tumour—say the liver epithelium—does not assist in the formation of the tumour epithelium, but undergoes a degeneration; though one would expect it would afford a favourable soil for an organism, and that it would take on active proliferation rather than degeneration. If it be true that the secondary tumour arises in the manner described, then in the tissues lying between the primary and secondary tumours pathological epithelium must exist. Thus in mammary cancer with secondary infection of the lymphatic glands in the axilla, the lymph channels in the area between these two tumours must contain a greater or less number of cancer epithelia, the non-removal or non-destruction of which, even when the axillary glands as well as mammary glands are removed, must be followed by a continuation of the disease. In treatment, while admitting that the knife affords in suitable cases and in certain situations the best chance of cure, he appears to have a preference for caustics in the majority of instances. His theory seems to be that the inflammation set up in the surrounding tissues by the caustic is likely to nullify the cancerous epithelia which have migrated into the sound area around. The agents which he prefers are caustic potash in stick, chloride of zinc in stick or as Bougard's paste, and arsenious acid, as Marsden's paste, spread on rubber plaster. Full details are furnished as to the precise mode of their employment.—Reprint from *International Journal of Surgery*, July 1892.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P. Ed., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, and on Midwifery and Gynæcology, School of Medicine, Edinburgh.

Intractable Vomiting of Pregnancy successfully Treated by Suggestion.—Dr Bérillon reports a case of intractable vomiting cured by means of hypnotic suggestion. The patient was a neuropathic, and the daughter of neuropathics. The suggestion was made to her that she could eat solid food without vomiting, and that she could perfectly digest it. She was also forbidden to take alcoholic beverages, for which she had a liking. The result was satisfactory.—*Archives de Tocologie*, March 1893.

Dystocia from Imperfect Cranial Ossification.—Dr E. Blanc points out, that whilst all obstetricians realize that premature ossification of the fœtal head acts as a cause of difficulty in delivery, few seem to be aware that imperfect ossification also produces dystocia. The fœtal head in such cases is moulded too much, and the delay so caused is specially evident when the cephalic end of the infant is on the perineum, for a rigid body is needed to carry out perineal dilatation.—*Archives de Tocologie*, April 1893.

Fœtal Dystocia due to Abdominal Ascites. — Parisot reports a case which seems to have been one of general fœtal dropsy, for it is stated that there was general infiltration of the integument as well as ascites. The placenta weighed 1600 grammes. The writer believes syphilis to have been the cause in this case.—*Archives de Tocologie*, April 1893.

A Case of Triplets.—Dr Lamparelli gives the details of a case of triplets. The mother, 34 years of age, was healthy, and had already given birth to five infants in single pregnancies. At the full term of her sixth pregnancy labour set in, and a female child was born, followed by its placenta. A male fœtus then presented transversely; it was turned and delivered. Another fœtus, also a male, was then turned and extracted. The placentæ of the two male infants were united by membrane, and there was an anastomosis between the vessels of the two cords. All were born alive, but died a few days afterwards: first one of the males, then the female, and then the other male. They were all smaller than usual, but the first-born female was larger than either of the males. —*Rassegna d'Ostetricia e Gynecologia*, No. 3, 1893.

The Galvanic Current in the Treatment of Uterine Fibroids.—In a long and exhaustive memoir Dr C. Decio reviews the use of electricity in the treatment of fibroids, and gives the results obtained in forty-six cases under his care. He concludes that the continuous current, applied according to the rules laid down by Apostoli (with some modifications), constitutes a palliative and safe method of treating fibroids, superior to all other therapeutic means. The diminution or suspension of the menorrhagia is a more evident result than a decrease in the volume of the tumour. By this means the condition of the patient may be so improved as to render subsequent operative interference possible. The number of sittings varied from six to twenty, and had an average duration of eight minutes. The maximum intensity of current without the induction of narcosis was 250 milliampères.—*Annali de Ostetricia*, March and April 1893.

Case of a Monstrosity.—Dr V. Y. Ronca relates a case in which a woman, 28 years old, gave birth, at the eighth month, to a fœtus which had an appearance partly human, partly like that of a tortoise, and partly like that of a rabbit (!). The head and face were large, like those of a boy of 12 or 14 years. The ears were enormous, and the eyes were as large as those of a horse. The liver, spleen, and intestine were also voluminous, and there were no lumbar vertebræ. She had been twice married, and had had normal infants by her first husband. She was an alcoholic, and addicted to sensual extravagancies (to one of which the writer looks for an explanation of the monstrosity); and her husband was an alcoholic, and had syphilis.—*Rivista Medico-Quirurgica Americana*, April 1893.

Development of the Placenta in Tubal Gestation.—Dr C. D. Jones has investigated microscopically the development of the placenta in tubal pregnancies. Forty-five specimens were examined. The chief conclusions arrived at are the transformation of the epithelial cells of the tubal mucosa into decidual tissue, and the origin of the new villi of the growing placenta by a budding of the epithelial layer of the old ones. He believes that his results confirm the view of Rabl, viz., that all the tissues of the body are originally epithelial in nature.—*American Journal of Obstetrics*, March 1893.

Cæsarean Section in Puerperal Eclampsia.—Dr J. Halliday Croom gives notes of a case of eclampsia in a primiparous woman whose cervix was hypertrophic and undilatable. The vagina was also very narrow. Since she was comatose, and since convulsions were following each other in rapid succession, Dr Croom performed Porro's operation. The child (an 8½ months' healthy male) was saved, but the mother died six hours after the operation. No autopsy was permitted.—*Medical Press and Circular*, March 1893.

Part Fifth.

MEDICAL NEWS.

University of Edinburgh.—At the "Capping" ceremony on 1st August, the following gentlemen obtained Gold Medals for their Dissertations in addition to the Degree of M.D. :—Francis Darby Boyd, James Samuel Risien Russell, James Lorrain Smith, M.A., John Cleasby Taylor, and William Ernest Francis Thomson, M.A.

University of Edinburgh.—*The following received the Degrees of Bachelor of Medicine and Master in Surgery:*—Wm. Alfred Johnstone Alexander (M.A.), George Bell Anderson, William Anderson, William Christopher Anderson (M.A.), George John Awburn, Robert Ballantine, John Thomas Balmford, Henry Percy Barlow, William Dodgson Barrow, Frederick William Barton, Daniel Henry Beegling (B.A.), James Bett Bell, William Bruce Bell, Hugh Percy Bennett, John Gibbs Francis Bent, William Thomas Blackledge, James Blyth, Maxwell Ranken Bow, Allan Stuart Boyd, Christian William Branch, Alexander Hill Buchan (M.A.), John Martin Buist, John Colin Caldwell, Alexander William Cumming Cameron, Peter Campbell, Featherston Cargill, Arthur Benjamin Carvosso (B.A.), Henry William Case, James Gibson Cattanach, William Catto (M.A.), William Rudolph Center,† John Eugene Adolphus Chatelier, Devendra Nath Chatterjee (B.A.), Cuthbert Christy, John Clark, Thomas Aldous Clinch, George Alexander Cohen, George Probyn Coldstream, Raphael Avedis Garabed Constantian, Henry Oakley Corfield, John Napier Craig, George Panton Crarer, Charles Crerar,* Donald Bayne Crerar, Andrew Croll, David Reid Crow, Nagendra Chandra Das, Arthur Dennison, George Robert Denton, Clarence Brian Dobell, James Kennedy Drysdale, John Buchanan Duff,* Robert Craig Dun,† John Davidson Duncan, Robert William Duncan, Thomas Dunlop, James Churchill Dunn, George Henry Dupont,† Alex. Maitland Easterbrook,* Edward Charles Edwards, Samuel Evans, Thomas Farthing, Duncan Monteith Ferguson, Joseph Lawrence Ferris, Peter Daniel Fick, David Findlay, Andrew Milroy Fleming, Wm. Edward Foggie (M.A.), Alfred Wightman Forrest, Arthur Foster, William Edward Fothergill (M.A., B.Sc.),* John Ainslie Foulis, David Pierce Foulkes, Robert Algernon Fox, Andrew Mearns Fraser, John Gallie Fraser, Robert William Fraser, Archibald Gardner, Thomas Gibson, Howard Beauchamp Gladstone, Charles Sievwright Glegg, John Hastings Glover, Thomas Goldie Goldie-Scot, Frank Thornborough Gourlay, Simon Dickson Graham, James Taylor Grant, Harry Grey, Arthur Gwyther, William Thompson Hall, William Crosbie Hamilton, Robert Hanton, Cooper Hardcastle, Thomas Browne Hearder, Charles Alfred Hogg,† Robert Hoggan, Crampton Whitaker Holme, John Hume, Geoffry Percy Humphery, Robert Hutchison,* John William Hyslop, Ernest Wm. John Ireland, William Roy Jackson (M.A.), Richard Cartwright Jameson, William Ernest Jameson, Thomas John Jehu, Richard Kenyon, Charles Kerr,† Clement Thomas Cory Kingdon, John Kippax, Walter Charles Campbell Kirkwood, Louis Francis Behagen Knuthsen, Frederick William Langton (B.A.), John Albert Lee, Edward Stewart Lewer, Frederick Lishman, George Osborne Morgan Lunt, William Frederick M‘Allister-Hewlings, George Allardice Macdonald, Hugh M‘Donald, Arthur William James MacFadden, George MacGibbon, John Alexander Mackenzie, Arthur Mackintosh, Hugh John Mackintosh, John Drummond Pryde M‘Latchie, James Dugald Maclean, John Duncan M‘Millan, James Garvie M‘Naughton,† Andrew M‘Neil (B.A.), Archibald MacNicol, Patrick William MacVean, Robert Haldane Makgill,* Robert Bruce Marjoribanks, James Marsh, Robert Brownlie

Martin, Anwyl Charles Matchett, Roderick Murdoch Matheson, James Crawford Maxwell (M.A.), William Millar, Thomas Benjamin Moore (B.A.), Arthur Henry Moorhead, John Mudie Morris (M.A.), Sylvanis Glanville Morris, Charles Graham Murray, David Murray, Duncan Gray Newton, James Dickson Noble, Louis Septimus Francis de Rohan Norman, George Williamson Park, Consett Howard Passman, James Veitch Paterson (M.A.),* Frank Russell Patterson, James Pearse, John Penny, Andrew Philip, George Phillips, James Coubro Potter, Raymond Herbert Price, George Loraine Kerr Pringle, Samuel Willis Prowse (B.A.), Elias Bell Purdon, George Martin Rae, Matthew Burrow Ray, James Reiach, Robert Rendall, Robert Riddell, Alan Robertson, William Robertson, Edward Robinson, James Benjamin Robinson, Leonard Nicholas Robinson, Francis White Hope Robson, Joseph Ernest Rogers, Robert Rosie, William Archibald Rutherford, Selim Moses John Saliba, Cecil Edward Salt, Muir Sandeman (M.A.), Herman Schmitz, Henry Scott, William Elmsley Scott-Moncrieff, John Payzant Silver (B.A.), Arthur Henry Havens Sinclair, Archibald Adam Scot Skirving, George Smith (M.A.), Thomas Smith, John Sorley (M.A.), St John Stanwell,† Arthur Paget Steavenson, John Steed,† Jas. Wilson Stenhouse, Charles Parker Stewart, David Waters Sutherland,* James Murray Sutter, John Tennant (M.A.),† George St Clair Thom, David Thomas (M.A.), Ernest Stanley Templeton Towert, Walter Barrie Turnbull, Herbert Wynne Vaughan-Williams, Hugh Walker (M.A.),* James Gellatly Walker, Harry Stones Walsh, Ernest Edwin Waters, Francis Hammond Watling, Robert Henry Watson (M.A.), Thomas Watson, William Thomas Wearing, David Arthur Welsh (M.A., B.Sc.),* Thomas Roberts Williams, Richard Arderne Wilson, Thomas Yeates, John Brown Yeoman,† Zorab Mackertich Zorab.

* Indicates that the Candidate has passed the Examinations with First-Class Honours.

† Indicates that the Candidate has passed the Examinations with Second-Class Honours.

Royal College of Physicians, Edinburgh.—John Clarence Webster, Edinburgh, has been elected a Fellow of the College.

Royal College of Surgeons, Edinburgh.—The following gentlemen having passed the requisite examination, have been elected Fellows of the College:—Joseph Fuller, Bristol; Edward Barnard Fuller, Cape Town; Roland James Pope, M.D., Edinburgh; Edward Reginald Morton, Edinburgh; James Crawford Gibb Macnab, Dysart; Julian Augustus Lea, Kimberley, Cape Colony; Arthur Conning Hartley, M.D., Bedford; and John Hardie, Edinburgh.

British Medical Service.—List of Surgeons on Probation of the Medical Staff of the British Army who were successful at both the London and Netley Examinations, August 1893.

No.	Name.	Combined Marks.
*1.	Spencer, C. G.,	5523
†2.	Fowler, C. E. P.,	5009
3.	Goodwin, T. H. J. C.,	4985
4.	Porter, H. E. B.,	4785
5.	Keble, A. E. C.,	4551
6.	Lattey, A.,	4489
7.	Collins, D. J.,	4440
8.	Killery, St. J. B.,	4402
9.	French, H. C.,	4307
10.	Smith, W. W.,	4205
11.	Barter, W. P.,	4105
12.	Williams, E. M.,	3916
13.	M‘Munn, J. R.,	3723
14.	Anderson, J. B.,	3642

* Gained the Herbert Prize, Montefiore Medal and Prize of 20 guineas, and the Parkes' Memorial Bronze Medal.

† Gained the "De Chaumont Prize."

International Medical Congress.—A telegram was received on 4th August 1893, by the Secretary of the National Committee for Scotland, from Professor Maragliano, General Secretary to the Congress, stating that the Meeting of the Congress had been postponed from September 1893 to April 1894. A letter, received since the date of the telegram, states that the reason for this decision is the sanitary condition of several European States, which has led the Executive Committee to resolve, by a large majority, to postpone the Congress until next April. The exact date of the inauguration will be fixed very soon.

Apollinaris Spring.—We are informed that H.R.H. the Duchess of Teck and suite, who are staying at Bad Neuenahr, have visited the neighbouring Apollinaris Spring. Her Royal Highness was conducted through the premises, and was much interested in watching the various operations of filling, corking, labelling, and packing the Apollinaris Natural Mineral Water. The Duchess was much impressed with the very large amount of carbonic acid gas contained in the spring, and proceeded for a few steps down toward the sunken courtyard in which the spring issued from the ground, in order to experience the effect of the gas, and afterwards caused her son, Prince Alexander, and her suite to do the same, in order to convince themselves of the volume and density of the carbonic acid gas there accumulated.

New "Tabloids."—We have received from Messrs Burroughs, Wellcome, & Co., the well-known London chemists, specimens of —(1), Compressed Effervescing Cubebs and Belladonnæ, each tabloid containing half a grain of powdered cubebs, and $\frac{1}{20}$ grain of extract of belladonnæ with an effervescing basis. These will be found most useful in laryngitis, bronchial catarrh, and other local affections; (2), Arsenite of Copper, each containing $\frac{1}{1000}$ grain,—these have been recommended in cholera, dysentery, and allied affections; and (3), Tar (wood), each containing 1 grain. These are found useful in fetid bronchitis and other pulmonary affections. We have much pleasure in recommending these "Tabloids" to the notice of the profession.

Thyrodin.—Messrs Allen & Hanburys, London, have sent us specimens of this new preparation. The name Thyrodin is applied to the purified extractive matter containing the active principles prepared from healthy fresh thyroid glands; 5 grains of the powder are equivalent to the eighth part of a healthy gland. The dose is 5 to 15 grains. They have also sent us Tabellæ, each weighing 4 grains, and corresponding on the average to one-eighth of a gland. The dose is 1 to 4 tabellæ. We have also received from them Cachets, each containing 4 grains of thyrodin; and a preparation called Thyrodin-Elixir, which is a solution of the active principles, prepared without heat, agreeably flavoured, and keeps well—dose 1 to 4 teaspoonfuls. These are excellent preparations of a most valuable therapeutic agent, and we can highly recommend them to our readers.

Virol.—We have received from the "Liquor Carnis Co., London," a sample of the substance denominated Virol. This is a highly concentrated complete food, consisting of the proteids of beef and eggs, the marrow of beef or essence of bone, the carbohydrate extract of malt, and the salts of beef and egg (including the lime salts of the shell), in proportions carefully adjusted to diet. It is a kind of emulsion in which the several ingredients are in a very fine state of division, and easily assimilated to the system. It is proposed as a substitute for cod-liver oil. It keeps well, is most agreeable to take, and will prove most valuable in the treatment of wasting and other diseases.

ANALGEN.—Messrs Thomas Christy & Co., London, have sent us samples of this substance prepared by Dahl & Co., Barnon. It is a derivative of Quinoline, and has the formula $NHCOC_6H_5H$. It is a white crystalline powder, odourless and tasteless, and in its therapeutic action resembles antipyrin. It is given in doses of 7 to 14 grains 3 times a day. It has been found useful in neuralgia, headache, etc., and is likely to be much used when it becomes better known. We have also received samples in cachets and in tabellæ, each containing 7 grains of analgen.

"IZAL."—We have received from Mr T. B. Brown, London, a specimen of this new disinfectant. It is a by-product of the patent coke ovens at the Thorncliffe Collieries, and is at once a powerful disinfectant and at the same time non-poisonous. It will be found most useful for disinfecting purposes, and we have pleasure in recommending it as a safe and efficient disinfectant.

ELIXIR PICIS COMP. (LAYNE).—We have received from the Layne Manufacturing Co., London, a sample of this "Elixir." Each fluid drachm contains 1 grain of pure wood tar. It is an excellent preparation when it is desired to administer wood tar in the liquid form. It is even pleasant in odour and taste.

NESTLÉ'S SWISS MILK.—We have received a sample of this milk. It is too well known as an excellent preparation to require any recommendation from us.

DR ABBOTT uses an obstetrical eye bandage. It consists of a strip of cheese cloth, the two edges of which are rolled in and then doubled over a second time. After the child has been born, and whilst waiting for the pulsation of the cord to cease, he wipes the baby's eyes, and then wraps the bandage round its head and eyes and pins it. When this is not done, the child often rubs its dirty fingers into the eye before the attendants have had time to wash the child. Since he has adopted this plan he has never had a case of ophthalmia neonatorum.

IN the last four numbers of the *Blätter für Klinische Hydrotherapie,* Professor W. Winternitz and Dr Pospischil have been publishing some very interesting experiments on the interchange of gases in the respiratory organs, in baths of different temperatures.

DR JÄGER of Stutgart has written a remarkable paper upon the cholera germ ; when, where, and why infectious. He believes that for the production of cholera three factors, which he terms X, Y, and

Z, are necessary. X represents the cholera germ, Y local and periodic tendencies, and Z individual tendencies, and he seems to point out that in the endeavour of the State to deal with cholera epidemics, it should first direct attention to factor Z, in the second place to factor Y, and only in the last place to factor X. Practically he maintains that X and Y can do no harm if factor Z is properly cared for.

OBITUARY.

THE LATE DR JAMES YOUNG.

It is with much regret we record the death, on 2nd August, at his residence, 14 Ainslie Place, of Dr James Young. He died too prematurely at the age of 61, after an illness extending to twenty-six days. On the 8th of July he had a chill, which was followed by acute gastro-hepatic catarrh. After a week of normal temperature, an unexplained sickness prefaced an attack of acute nephritis. In a few days the severity of this complication subsided, and the evidences of albumen almost entirely disappeared from the urine. Subsequently pneumonia of the right lung occurred, to which, after forty-eight hours, he succumbed.

The son of the well-known Dr William Young of George Square, who practised in Edinburgh for nearly half a century, he was the youngest of four brothers. The eldest, Dr Richard White Young, died at the age of 24, soon after he had commenced the practice of his profession, and before he had opportunity to make his mark in it, and from his early promise he would doubtless have done so. A third brother, William, was cut off whilst still a student attending the medical classes.

Dr James Young was born at Edinburgh in 1832. He studied at the University, and graduated as Doctor of Medicine in 1853, and in 1856 was admitted a Licentiate of the Royal College of Surgeons.

For some time he practised at Anstruther in Fife, and after distinguishing himself there he returned to Edinburgh in 1855, and joined his father in practice, and at his death succeeded to it. He was popular with the patients, and from his professional skill, earnest attention, and kindness of heart, not only retained the *clientèle* of his father, but attracted a large circle of appreciative friends and patients of his own. He laid himself out for family practice. At an early period, however, he directed his attention specially to Obstetric Medicine and Gynæcology, and was no mean proficient of the Obstetric art. He had also in his student days been apprenticed to Dr John Lizars, and at this stage of his professional career had a liking for Surgery, and was a neat and dexterous operator. In 1861 he was admitted to the Fellowship of the Edinburgh Obstetrical Society, and at a later period also joined the Medico-Chirurgical. His attention was chiefly given to the former, and for several years he discharged the duties of Treasurer with much acceptance; he was also (1875-77) one of the Vice-Presidents. Dr Young was one of the Fellows who took an enlightened view as to the publication of a yearly volume of its Transactions, and when the Society resolved to publish in a separate form the first volume of Transactions, he was appointed a member of the Publication Committee, and in that association rendered valuable service by his energy and interest in its proceedings. The first volume was published in 1870, and now, with one exception, all the members of that Committee who conferred so great a benefit upon the Society have passed away. The Society has since well sustained the work so auspiciously inaugurated. Dr James Young was a frequent contributor to the work of the Society, having made nearly fifty communications to it. Most of these were notes on cases as they occurred in the practice of a busy practitioner; yet they were always of interest, and many of them elicited the consideration of new points, stimulated discussion, or threw a fresh light on an obscure subject, whilst all bore testimony to his energy of character, accuracy of observation, and professional intelligence.

Whilst diligent and highly appreciated by the public in his profession, Dr Young had his share of the trials and troubles of life to contend with, but he had also the gratifying recollection that in 1882 a number of his professional brethren in the city and its neighbourhood testified their respect and esteem for him as a member of the profession, as a warm and attached friend, and as one whose life had been devoted to Christian philanthropic objects, by presenting him with an address in these terms, accompanied by a handsome timepiece, on which was inscribed, "As a token of their kindly feelings towards him, by a number of his fellow-practitioners in Edinburgh and its neighbourhood." The subscribers were numerous, and included the names of Fellows of the two Colleges and others. One of them, an old friend, observes he was of a very genial, kindly, and happy disposition.

Possessed of an ardent and impulsive nature, he was a warm, sincere, and attached friend; and no one appreciated more fully or reciprocated more cordially any kindness shown him. He was esteemed with a sincere regard by many of the profession who had the opportunity to know the real worth of the man, and the names of the late Sir James Simpson and Sir Robert Christison he was proud to rank amongst those of his friends. A notable feature in Dr Young was his Christian character. His religion guided his daily life. Sincere in his beliefs, he laboured faithfully to do his Master's work, and in connexion with this phase of his character almost the only public institution he took active part in the management of, and that for many years, was the Edinburgh Medical Missionary Society. He was a member of the Acting Committee; and he also showed a deep interest in the welfare of young men. For many years Dr Young was an elder in Free St John's Church and a member of the Free General Assembly. Indeed, he took interest in all good works, and gave liberally and systematically to schemes of Christian charity. To his patients he endeared himself, not only by his professional ability, but also by his courteous attention, kindliness of action, and unceasing interest in their welfare.

He leaves a widow, two daughters, and four sons, three of whom are members of the medical profession. One is settled in Canada, another (Dr J. Y. Simpson Young) is at Swinton, Berwickshire, and he is succeeded in his practice in Edinburgh by Dr Richard J. Erskine Young, who had lately been assisting him in his work, and who graduated with distinction as Doctor of Medicine in August last.

THE LATE JAMES MACKINTOSH CAMPBELL, M.A., M.B., C.M., OF KIRKCALDY.

MUCH regret will be felt by all who knew him, when they hear of the untimely death of this promising young medical man. Born in India, where his father, the Rev. Alexander B. Campbell of Markinch, was then a missionary, he soon came to Scotland with his parents, and after 1864 his home was in Markinch. After an excellent education—first in the parish school, and later in Cupar Academy—he entered the University of Edinburgh in 1876, when only in his fifteenth year; he carried off many prizes, and graduated M.A. in 1880. After this he began a very full and active medical course of five years, in which he greatly distinguished himself, specially in Anatomy, Surgery, and Midwifery. In Anatomy especially he proved himself an excellent dissector, and was zealous in every branch of his work. He was able to enrich the anatomical museum with a series of Fifeshire skulls. It was probably in his hospital work that the special interest of his student days centred. He was a model out-patient clerk,—zealous, interested, always at his post, he had his cases ready for examination by the surgeon, and had generally formed a very accurate opinion as to their nature. He had a marvellous gift of winning, almost at first sight, the confidence and affection of the patients. A pleasant frank manner and a real enthusiasm of humanity did it, without affectation or pretence of extraordinary attention. Soon after graduation he started in practice in Kirkcaldy, and early laid the foundation of a very large practice. He was energetic and active, and spared no pains in the treatment of his cases. He had a special leaning to surgery, and was successful in the management of many serious cases. His exuberant energy was not satisfied by his professional work, and within the last two years he entered the Town Council of Kirkcaldy, was already elected a bailie, and it is an open secret that had he wished it, within a very short time higher honours, both municipal and parliamentary, might have been within his reach, for he was a capital speaker, with the assured convictions of youth, and his pleasant manners made him a great favourite with the public. Possibly his ideals, political and otherwise, had hardly crystallized; and on looking back it would have been wiser in many ways had he not dissipated his energy and wasted his strength on subjects beyond his profession. His health could not stand the strain; and, after consulting Sir Andrew Clark, he was sent to Colorado Springs, where he died of pulmonary disease on July 21st. His brother had been with him, but left with better hopes a few days before his death.

PUBLICATIONS RECEIVED.

Annual Report of the Department for the Insane of the Pennsylvania Hospital for year ending April 1893. Philadelphia, 1893.

Annual Report of the Sanitary Commissioner with the Government of India, 1891. Calcutta, 1893.

Dr Vincenzo Allaro,—Il Magnetismo Negli Animali e Nelle Piante. C. Chiesa e F. Guindani, Milano, 1893.

Army Medical Department Report for the year 1891, Vol. 33. London, 1893.

James Braithwaite, M.D. Lond.,—The Retrospect of Medicine. Vol. 107, Jan.-June 1893. Simpkin, Marshall, Hamilton, Kent, & Co., Lim., London, 1893.

A. Symons Eccles, M.B. Aberd., etc.,—Sciatica. Macmillian & Co., London, 1893.

Eightieth Annual Report of the Royal Edinburgh Asylum for the Insane for the year 1892.

John Gorham,—Tooth Extraction: A Manual on the Proper Mode of Extracting Teeth. 4th Edition. H. K. Lewis, London, 1893.

Douglas Graham, M.D.,—Recent Developments in Massage. George S. Davis, Detroit, Mich., 1893.

Prof. Landon Carter Gray, M.D.,—A Treatise on Nervous and Mental Diseases. H. K. Lewis, London, 1893.

Isabel Adams Hampton,—Nursing: Its Principles and Practice. For Hospital and Private Use. W. B. Saunders, Philadelphia, 1893.

Alex. Hill, M.A., M.B., etc.,—The Physiologist's Note-book. Charles Griffin & Co., Limited, London, 1893.

T. N. Kelynack, M.D., etc.,—A Contribution to the Pathology of the Vermiform Appendix. H. K. Lewis, Lond., 1893.

G. D. Knight,—Movable Kidney and Intermitting Hydronephrosis: A Thesis for the Degree of M.D. Aberdeen. Baillière, Tindall, & Cox, London, 1893.

J. Liddell, M.D. Edin.,—The Mineral Waters of Harrogate. Young J. Pentland, Edin. and Lond., 1893.

John C. M'Vail, M.D., etc.,—Second Annual Report to the County Council of Dumbarton for year 1892. Robt. Maclehose, Glasgow, 1893.

John C. M'Vail, M.D., etc.,—Second Annual Report to the County Council of Stirling. Robt. Maclehose, Glasgow,1893.

R. Sydney Marsden, D.Sc., M.B., etc.,—Report on the Sanitary Condition of the County Borough of Birkenhead for the year 1892. Wilson & Jones, Birkenhead, 1893.

William Murrell, M.D., etc.,—What to Do in Cases of Poisoning. H. K. Lewis, London, 1893.

Surgeon-Major T. H. P. Parke,—Guide to Health in Africa. Sampson Low, Marston, & Co., London, 1893.

Aubrey Richardson, Solicitor,—The Law of Cremation. Reeves & Turner, Lond., 1893.

Prof. S. L. Schenk,—Manual of Bacteriology for Practitioners and Students. Longmans, Green, & Co., London, 1893.

Dr Arnold Schetelig,—Homburg-Spa: An Introduction to its Waters and their Use. J. & A. Churchill, London, and Johannes Alt, Frankfurt, A.M., 1893.

Prof. Adolf Strümpell,—A Text-Book of Medicine for Students and Practitioners. H. K. Lewis, London, 1893.

Octavius Sturges, M.D., F.R.C.P., etc.,—On Chorea or St Vitus's Dance in Children. John Bale & Sons, London, 1893.

Dr Ch. Talamon,—Appendicitis and Perityphlitis. Translated from the French by R. J. A. Berry, M.B., C.M. Young J. Pentland, Edin. and Lond., 1893.

Sir Henry Thompson, F.R.S.C.,—Introduction to the Catalogue to the Collection of Calculi of the Bladder. J. & A. Churchill, London, 1893.

Transactions of the American Dermatological Association for September 1892. New York, 1893.

Transactions of the Obstetrical Society of London, Vol. 25, Part 1. London, 1893.

Twenty-First Annual Report of the Local Government Board, 1891-92. London, 1893.

Dr Jules Voisin,—L'Idiotie. Félix Alcan, Editeur, Paris, 1893.

L. C. Woolridge, M.D., D.Sc.,—On the Chemistry of the Blood. Kegan Paul, Trench, Trübner, & Co., Lim., London, 1893.

Joseph Wright,—Laird Nicoll's Kitchen, and other Scottish Stories. Joseph Wright, Glasgow.

Part First.

ORIGINAL COMMUNICATIONS.

I.—ON VARIETIES OF THE APPENDIX VERMIFORMIS, CÆCUM, AND ILEO-COLIC VALVE IN MAN.

With a Plate.

By **John Struthers, M.D.**

Although the more immediate cause of this paper appearing now was the recent discussion of the pathology and surgery of the appendix vermiformis at our Medico-Chirurgical Society, reported in the August number of *this Journal,* I desire to mention that the giving an account of my series of specimens, with remarks on the anatomy of these parts, is an intention of old standing, impeded by the pressure of college duties. When, of the little vestigial tube attached to the cæcum, a physician of experience and standing is able now to say that "probably no portion of the intestinal canal is more frequently the site of acute, severe, and fatal disease than the appendix vermiformis," no apology need be made for any endeavour to add to our knowledge of the various conditions that body may present. The subject, besides, is one of morphological interest. The condition of the cæcum has at the same time to be observed as partly determining that of the appendix. The question of the competency of the ileo-colic valve is also an interesting one clinically as well as anatomically, and that has to be looked into in connexion with the conditions presented by the cæcum.

I. Definition of the more usual Anatomy of these parts.

It will greatly facilitate if the figures and their explanation are looked at first.

(*a.*) *Appendix Vermiformis.*

The appendix, like other vestigial structures, frequently presents variation. It varies in its place of origin, mode of origin, direction, length and width, but most frequently has the following characters. It *arises* at about mid-height of the back of the cæcum, generally to the inside of the middle; the *orifice,* situated at the upper or inner side of a special triangular fossa, to be described below as the "vestigial fossa," has, at its upper side, a sharp crescentic edge suggesting a valve. The *direction* is at first upwards (ascending stage) to about the level of the top of the cæcum proper, as indicated by the posterior frænal furrow, bound to the cæcum by the peritoneal covering of the back of the cæcum, and then downwards and inwards (second stage), showing itself (as in figs. 3 and 4) below the ileum. There it is usually pendulous and free in the abdominal cavity, surrounded by peritoneum except behind or externally where it is attached by its narrow triangular mesentery, carrying bloodvessels and adapted to the bendings of this stage, but leaving the appendix freely movable there.

The direction of the second stage is liable to very frequent variation. Instead of being directed downwards, giving a pendulous free part, visible in the undissected abdomen, this stage of the appendix may, with cæca of the usual form, have almost any direction; such as straight up, obliquely upwards and outwards, obliquely upwards and inwards (fig. 11), or turned upon itself in a circle (fig. 12), in either case the entire appendix hidden behind the great intestine. When arising from the bottom of a blunt cæcum (figs. 9 and 10), the first stage of the appendix may not be directed upwards; when arising from the end of a tapering cæcum (figs. 5, 6, 7, and 8), the appendix may have any direction, and is not likely to be hidden.

In *length*, in my specimens, the appendix varies from $\frac{3}{4}$ inch (fig. 14) to 6 inches. The length of the appendix proper, shown in fig. 13, was $4\frac{3}{4}$ inches. From 3 to 4 inches may be given as the prevalent length of the appendix, but variation is frequent. It is said to have been found to reach a length of 8 inches. The *width* is commonly compared to that of a goose-quill. In the Table, the diameter is seen to go beyond that in some, to $\frac{1}{3}$ inch (cases 3, fig. 5; 6, fig. 8; 13; and 18, fig. 14), and in some not to exceed $\frac{1}{8}$ inch (cases 16, fig. 13; and 17). In case 20, fig. 15, it is $\frac{1}{10}$ inch; less on the first stage. About $\frac{1}{4}$ inch may be given as a fair average diameter, taken at the middle. In dried specimens, though well inflated, there is, perhaps, some little shrinkage in the width.[1] The diameter usually diminishes a little distally, but not always; the end usually blunt pointed, sometimes quite blunt, sometimes but not often sharp pointed.

At the *origin*, there are to be noted the so-called valve, the orifice, and a short slightly funnel-shaped stage. The "valve" is not a valve proper, not a pouch within the orifice, resisting reflux like a valve in a vein, but merely one of those crescentic edges, or folds, that always occur when a tube passes off from another tube or cavity at an acute angle. If the two tubes are in contact with each other for some distance, fusion of their walls takes place, and there is then, not merely a sharp concave edge, but a common septum having the appearance of a semilunar valve of greater or less depth. When the appendix is continued from the end of a tapering cæcum, there is no valve. Ordinarily, as the appendix goes off at an angle to the axis of the cæcum, there is at least a sharp concave edge or, more usually, more or less of a semilunar membrane, situated always on the side corresponding to the first stage of the appendix. This valve-like fold, or common septum, is well seen in dried specimens, translucent, bounded above by the line of junction of the caecum and appendix, or, more correctly expressed, by the line where their walls have ceased to be fused. The valvular fold, thus defined, is sometimes large, may, with a good-sized appendix, be $\frac{1}{3}$ to $\frac{1}{2}$ inch across by $\frac{1}{4}$ to $\frac{3}{8}$ inch in height; the free margin not necessarily very concave, the sides of attachment either concave, or straight, or even a little convex towards each other, in the latter cases giving the fold a triangular rather than a semilunar outline.

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[1] As to the influence of age, or sex, on the size of the appendix, my record is scanty. Nos. 1 and 2 were from the fœtus, lengths 1 and $1\frac{3}{4}$ inch, widths $\frac{1}{10}$ and $\frac{1}{8}$ inch. The other specimens were from adults, and of these the age and sex are noted in Nos. 4, 5, 6, 10, 16, and 18. No. 4, fig. 6, was a male æt. 43, appendix fully 2 inches, blocked and now shrivelled; No. 5, fig. 7, a male æt. 79, appendix $3\frac{1}{2}$, blocked and now shrivelled; No. 6, fig. 8, was an aged male, appendix 4 inches long, $\frac{1}{3}$ inch wide. All of these three were terminal from tapering cæca. No. 10, a male æt. 49, appendix $3\frac{1}{2}$ and $\frac{1}{6}$ inch wide; No. 18, fig. 14, a male æt. 45, appendix $\frac{3}{4}$ inch long and $\frac{1}{3}$ inch wide; No. 16, fig. 13, was a female æt. 64, appendix $4\frac{3}{4}$ inches long, $\frac{1}{8}$ inch wide. There is here no definite evidence as to atrophy with age; No. 16, fig. 13, is for it as regards width; No. 6, fig. 8, is against it in regard both to width and length.

Any impediment which this valve may offer to the entrance of caecal contents into the appendix is on the principle of obliquity of perforation, as in the case of the entrance of the ureters into the bladder, but in the latter the opposition is much more effectual from the ureter lying for some distance between the mucous and thick muscular coats of the bladder. In both cases, the obstacle is called into play by the pressure of the contents of the caecum or bladder, and in both cases is undone by distention. When the fundus of the caecum is full, or when the body lies on the back or on the left side, there is nothing to prevent semifluid caecal contents raising the valve and passing into the appendix. That is rendered easier by the depression of the vestigial fossa within which the orifice is placed, giving the appearance of the orifice beginning before the valve begins.

At the ending of ducts the orifice is smaller than the duct, but this does not seem to apply to the appendix. In some of the specimens the orifice does look small for the width of the appendix, but in dried specimens the orifice is apt to suffer contraction. Being transversely oval and looked at from before, the orifice at first glance looks smaller than it really is, but when fairly examined it seems to be of size corresponding to the part of the canal immediately succeeding. As the occurrence of ulceration, or some kind of obstruction, near the orifice is referred to in the account of some of the cases of death from disease of the appendix, it may be of interest to note that, putting aside specimens in which the appendix begins from a wide funnel of the cæcum, the appendix itself has a short slightly funnel-like stage, for the first $\frac{1}{4}$ to $\frac{1}{2}$ inch, but without sudden or much bend or special point of contraction. Hardened matter making its way up may meet with a slightly diminished calibre $\frac{1}{4}$ to $\frac{1}{2}$ inch after entering, but one would rather expect that the most natural place of arrest would be, not at the end of the orifice stage, but about the middle, where the second stage of the body generally bends away from the ascending stage, or at the very end, from final impaction or hardening.

(*b.*) *Cæcum.*

Although the cæcum is always defined as the part below the junction of the small and great intestine, the term is often loosely applied so as to include the neighbouring part of the colon, which is generally somewhat wider than the part of the colon next above. From this vague use of the term may have arisen the serious error of describing the cæcum as usually not covered by peritoneum behind, with the consequent pathological error in speaking, by whatever name, of inflammation and abscess in the supposed loose areolar tissue behind the cæcum.[1]

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[1] *Note on the relation of the peritoneum to the cæcum.* The following quotation from the article "Stomach and Intestines" in Todd's *Cyclopædia of Anatomy and Physiology* shows the elaborate definiteness with which this error has been committed :—

"The serous covering of the cæcum is chiefly remarkable from the closeness with which it generally attaches the bowel to the fascia over the iliacus muscle. When the tube is but moderately distended, it covers only its anterior surface. Extreme contraction can, however, render it a more complete covering ; and may even produce it into a kind of meso-cæcum behind the bowel. While conversely, great distention of the tube reduces the peritoneum to a partial investment ; which occupies but a third, or even less, of the intestinal surface."

That passage is marked in my copy of the Cyclopædia with the marginal annotation "all wrong." If it be said, in palliation, that the article was written 34 years ago, there is the following in the latest completed edition of our leading text-book in Anatomy (Quain's *Elements of Anatomy*, 1882, vol. ii. p. 614), after a correct definition of the cæcum as "that part of the large intestine which is situated below the entrance of the ileum" :—

"It is covered by the peritoneum in front, below, and at the sides: but behind it is usually destitute of peritoneal covering, and is attached by areolar tissue to the fascia covering the right iliacus muscle. In this case the cæcum is comparatively fixed ; but in other instances the peritoneum surrounds it almost entirely and forms a duplicature behind it, called meso-cæcum."

And so physicians, misled by such anatomical descriptions, have located inflammation and abscess (variously under the names of perityphlitis, paratyphlitis, and post-cæcal cellulitis) in this supposed bed of areolar tissue behind the cæcum. And I can recollect being taught that the cæcum might be down in a hernia without a sac, because it is not covered by peritoneum behind. As I have long been in the habit in my teaching of commenting on the error in question, and have specially asked the attention of various anatomists to it, the criticism may be recorded here. Such, one is tempted to remark, would seem to be the influence of authority even in our anatomical schools, the little reference to the Book of Nature, for any one who will

In taking the length of the cæcum, the ileum is not a reliable guide; if taken from the lower edge of the ileum the measurement falls short, especially when, as often happens, the last stage of the ileum is directed very obliquely upwards. The upper edge of the end of the ileum would be a less variable point than the lower edge, but it goes about ½ inch above the level of the orifice. The measurements should be taken from the middle of the constrictions defined below as the anterior and posterior frænal furrows (*a, f, f,* fig. 10, seen also in fig. 9; *p, f, f,* figs. 3 and 12, seen also in figs. 11, 15, and 16). There is not generally a constriction marking off the limit of the cæcum on the outer side (seen at *p, f, f,* in fig. 9, but the constriction marked *c, f,* in fig. 10, is below the true limit), as the posterior frænum does not generally pass beyond the postero-external band sufficiently to cause a constriction externally. If within the cavity, the point to measure from is the narrow end of the orifice. With frequent variation in both directions, the more usual length of the cæcum may be given as 2¼ to 2½ inches.

The fully-formed Cæcum.—The form and parts of the developed cæcum cannot be interpreted without reference to the stages of transformation from the fœtal condition, but the usual characters of the adult cæcum may first be defined. The position of the three longitudinal muscular *bands* of the colon is seen in figs. 3 and 4 (anterior band, *a, b;* postero-internal band, *p, i, b;* postero-external band, *p, e, b;* the same in the other figures), as they traverse the cæcum towards or from the root of the appendix. The *postero-internal* band goes straight down at the meeting of the two flaps of the valve to reach the appendix; the *postero-external* band curves inwards and finally a little upwards to the appendix; and the *anterior* band, having gone down the front (as seen in figs. 9 and 10), passes backwards on the inner side of the fundus, notching the cæcum there, and is continued upwards and outwards on the back of the cæcum, towards the appendix.

The cæcum is thus subdivided into three more or less bulging *saccules* (*s, s, s,* in figs. 3 and 4), a *posterior*, below the posterior frænum of the valve, usually smallest and least bulging of the three, serial with the posterior row of saccules of the colon; an *internal*, below the valve and its anterior frænum, serial with the internal row of saccules of the colon; and an *inferior*, bulging down between the anterior and the postero-external bands, forming the fundus of the adult cæcum, and in series with the external row of saccules of the

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take the trouble to lift up the cæca in the daily opportunities of the dissecting room and pathological theatre, may see that ordinarily the cæcum is wholly peritoneal behind as well as in front and on the sides. That cases of exception to some extent may occur need not be doubted, but, if so, they must be rare, and such an occurrence cannot be allowed to excuse the serious error of describing the cæcum as usually uncovered by peritoneum behind. My impression is that variation occurs rather in the opposite direction, the peritoneum extending some way above the cæcum proper upon the back of the colon.

colon. The anterior longitudinal band is the broadest and most marked, having most resistance to sustain; it may lie to either side of the middle line of the cæcum (as in figs. 9 and 10), thereby determining the relative breadth of the internal and external saccules; it may notch the fundus at the middle, giving a deeply and nearly equally bifid fundus (as in fig. 16); but generally passes somewhat to the inner side (as in fig. 12), greatly constricting the cæcum there, leaving the external saccule as the fundus proper of the adult cæcum.

Vestigial Fossa.—The three longitudinal muscular bands are described as continued from the uniform longitudinal layer of the appendix, but in the main the arrangement at the origin of the appendix is otherwise. As shown in figs. 3 and 4, and seen also in figs. 12, 14, 15, and 16, the three bands do not run upon the appendix, but bifurcate and join each other near it, enclosing a triangular area within which the appendix arises. This area may be termed the vestigial fossa, as it is the remains of what was the end of the fœtal cæcum.

This arrangement is seen on examination of a series of dried translucent specimens, in which the disposition of the muscular bundles is clearly seen. The three bands bifurcate in bulk, the bifurcations of each continued into those of the two other bands, the sides of the triangular area from ¾ to 1 inch in length, the angles rounded off by the internal bundles turning inwards; and these most internal bundles are seen to send in on the wall of the depressed area, towards the orifice of the appendix, a thin layer of fibres assuming a circular arrangement. The most prominent boundary of this shallow triangular fossa is usually the inferior, owing to the greater bulging of the inferior saccule, the least prominent the external. The orifice of the appendix is generally towards the upper angle, but may be at the inner side.

Changes from the Fœtal to the Adult Condition.—The account usually given of the earlier stages of the intestine is, that there is for a time no cæcum, that a diverticulum grows out and elongates, at first without distinction between cæcum and appendix, and then, that the upper part widens with the great intestine, leaving the appendix as a narrow part. It will suffice here to take the advanced fœtal condition, as represented in fig. 1, from a specimen noted below (No. 1) in which the great intestine has not yet attained its full width in comparison with the small intestine. The cæcum is tapering or funnel-shaped, and is continued into a relatively long appendix. The appendix begins by a funnel-shaped stage, and the part to be afterwards relatively narrowed as the orifice is indicated (at *a*, *p*, *x*) on the under side.

The transformation from this fœtal form to the developed form is shown in the diagram, fig. 2. The diagram is that of an antero-posterior section of the cæcum and appendix, but the end of the ileum, which naturally lies more to the inner side, is introduced in order to show a section of the ileo-colic valve. The change has consisted in the great growth downwards of the lower and anterior part of the funnel-shaped fœtal cæcum, forming the fundus of the developed cæcum. The now relatively narrow appendix is thus left behind, attached abruptly at some part of the back of the developed cæcum. It is found generally about the middle and a little to the inner side, but may be higher or lower, and if the usual transformation does not take place, it remains at the end of a tapering cæcum. Figs. 5, 6, 7, and 8 show examples of the tapering cæcum, with continued appendix; the remaining figures show varieties of the bulbous or bluntly ovoid form of the developed cæcum.

(c.) *Ileo-Colic Valve. Evolution, Normal Characters, and Varieties.*

The valve may be studied with the cæcum suspended in fluid, but its characters are well seen in a series of moderately distended dried specimens, opened in front. My object in this paper is to examine the conditions of this valve in the human body, in which it appears to attain its full development as an arrangement capable, normally, of preventing reflux to the small intestine, perhaps as an adaptation to the erect posture. But it is a composite structure, on the nature of which light is thrown by examining its more simple conditions in other species. The comparative anatomy of this valve cannot be said to have been fully investigated; the inquiry would be a wide and troublesome one, and could be accomplished satisfactorily only with a previous appreciation of the points to be ascertained.

From the specimens I have been able to examine in various mammals, the following conditions seem to indicate the *stages in the evolution of the valve.* The condition is influenced by the direction of the last stage of the ileum. When it is parallel to the cæcum, there may be merely a septum common to the ileum and cæcum, terminating in a sharp crescentic edge. Looking down from the colon, the two apertures are seen like the mouth of a double-barrelled gun, more or less equal, separated by this ileo-cæcal septum. The term "junction" is merely one of convenience, as the two intestines were originally a simple tube, until the great intestine became enlarged, or until a cæcum diverged from it, and spread upon the wall of the ileum. All valvular projections of mucous membrane are originally double; they may remain so, as in the case of the pyloric curtain and the crescentic folds of the colon, or they may fuse, as in the case of this ileo-cæcal septum or the so-called valve of the appendix. When the ileum is parallel to the cæcum, or meets it obliquely, the common septum is more or less longitudinal, not necessarily having a valve-like position, but towards the free edge it may be deflected and send out horns so as to form a commencing valve.

In the next stage, there is, in addition to the common septum, more or less of a crescentic projection at the opposite side of the mouth of the ileum, confined to it, not going across the colon. In further stages, the horns of the two approach and unite, and, when united, form a more or less circular curtain, like a diaphragm, surrounding the iliac orifice; the latter generally ovoid, the ends at the confluence of the horns. The curtain goes round and round, like the human pyloric curtain, without fræna, and cannot be efficient in preventing reflux unless with the aid of a sphincter muscle at its attached circumference, as occurs at the pylorus. The pyloric "valve" is not a valve but is essentially a sphincter muscle, the variable soft curtain within assisting merely by lessening the size of the aperture to be closed. Nor is the curtain essential. If a series of human pyloric valves be examined, it will be seen that the curtain varies much, often narrower at one side, sometimes reduced to a crescent with a narrow ridge on the rest of the circumference. The sphincter muscle is the essential structure, and the use of the whole "valve" is to prevent premature onward passage, not to prevent reflux, to which it appears to be ready at all times to offer no objection. But the utility of the ileo-cæcal valve is precisely the opposite; in its fully developed condition it is a mechanical valve, proved to be so by its efficiency in the dead body. The presence of an ileo-colic valve to the extent of the curtain stage is, therefore, not to be inferred as constituting an efficient valve. There is want of evidence as to how far, or whether at all, in animals possessing an ileo-colic curtain, there is a sphincter muscle, or any muscular structure beyond the few fibres of the circular coat of the intestine seen in the flaps of the human ileo-colic valve.

In a higher formation of the ileo-colic valve, the upper crescentic fold runs across the colon, the horns of the ileo-cæcal fold running up to near it, but still not constituting an efficient valve; and finally, as in man, when the valve is normal, the horns run up and join the ileo-colic fold; not only is a curtain formed by the junction of the horns of the two crescentic folds, but the continuation of the ileo-colic fold across the colon forms fræna, serving to prevent the flaps from being driven through to the ileum, and the valve is complete.[1]

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[1] For examples of these various stages of development of the valve, see *Note A*, at the end.

In regard to the *conditions that determine the arrangements of the ileo-colic valve in man*, supposing an efficient valve to be useful, the following considerations may be noted. In an intestine of uniform calibre, an efficient valve would require to resemble those of the veins,—a semilunar pouch with a bulging sinus, the two flaps more than broad enough to meet. But here there are three disturbing conditions requiring a different adaptation :

(1.) The *abrupt change from small tube to large tube.* Had this been the only change, a sufficient projection of the lips of the orifice of the smaller tube, with fræna on the side of the greater tube, would have effected the result; the fræna extending in the direction of the axis of the larger tube. The

The *typical form of the valve in the human body* is shown in figure 4,—the orifice, the lower flap (*l*, *v*), the upper flap (*u*, *v*), the posterior frænum (*p*, *f*), and part of the anterior frænum. The figure is diagrammatic, as the full breadth of both flaps cannot be seen in one view. In full-face views of the valve and orifice, what appears as the inner half of the back of the cavity belongs to the inner wall, and the end of the ileum should not be seen in such a view. The ileum usually enters at the posterior half of the inner surface of the great bowel, the forward enlargement of the latter in development leaving it there; and the orifice, directed backwards and a little to the right, looks outwards more than forwards. It is most convenient to term the ends of the orifice, and the fræna, anterior and posterior, and the measurement of the flaps from attached to free margin their breadth.

expansion of the greater tube over the lips of the smaller would become a substitute for a sinus for effecting the closure of the valves.

(2.) The *bend on the tube*, nearly rectangular, at the junction. Although the ileum generally approaches the great intestine with more or less obliquity upwards, the plane of the area of junction forms nearly a right angle with the great intestine. As a result of this rectangular setting, the fræna of the valve are not in the direction of the great intestine, as they must have been but for the bend, but run transversely to the axis of the great intestine. As above noted, in connexion with the stages of the valve among mammals, the ileum, cæcum, and colon may all be in the same direction, and nothing more is implied in this arrangement than an ileo-cæcal septum. This relation of the two intestines is in no way incompatible with the further development of an ileo-colic valve were it, so to speak, to be functionally useful, as it appears to be in man and in mammals approaching man. When the cæcum and neighbouring part of the colon have passed across to the right and descended to their permanent locality in the right iliac and lumbar region, the bend becomes a fixed rectangular change of direction, to which a fully developed ileo-colic valve may be regarded as an adaptation, possibly having relation to the erect posture.

(3.) The *divergence of the cæcum*. Simply, an abrupt general enlargement from a small to a great intestine would have enabled the contents of the latter to close the valve, but with the bend up of the colon a short cæcum becomes necessary to effect that result upon the lower flap of the valve. In nearly all of the few mammals in which there is no cæcum, there is the absence of abrupt change from a small to a great intestine, and in all of them there appears to be the absence of any definite bend, and of valve. The cæcum, however, when present at all, goes further than enough to effect the above result, and appears to be a functional organ in connexion with further digestion or absorption; and its divergence affects the lower flap of the valve. The direction of that part of the valve may be regarded as determined by its being, as it were, dragged down by the downward extension of the cæcum; and its occasionally great breadth as resulting from the fusion of the walls of the ileum and cæcum, seen to a large extent in mammals in which the ileum and cæcum are close together.

These three conditions—the abrupt enlargement, the rectangular bend, and the downward growth of the cæcum—may, therefore, be considered as determining the peculiarities of the ileo-colic valve in man. While the two flaps of the fully developed valve may thus be regarded as modifications of the fræna and lips of the orifice of the smaller tube entering the greater one, adapted to the function of preventing reflux into the small intestine, they are also serial with the numerous crescentic folds of the great intestine, present in man and in mammals in which the colon is sacculated.

The area enclosed by the outline of the junction of the great and small intestine is easily seen in translucent specimens. When the ileum is directed obliquely upwards, the form of the end is changed to an oval, directed upwards and backwards, $1\frac{1}{2}$ to 2 inches in height, with an average width of 1 inch, but wider at the orifice. The lower half of the area is occupied by the lower flap; and opposite the upper half are the more or less slanting upper flap and the orifice. When the ileum is transverse or descending, the area is reduced to 1 inch in height, or less, and has the usual rounded form of the small intestine, or may be a little compressed vertically. When the ileum passes round to the back, the area is very oblique upwards and backwards and curved, with the concavity towards the great intestine.

The requirements for a fully-formed valve are, sufficient breadth of the lower flap, with outward inclination of the upper part towards the orifice; sufficient breadth of the upper flap, with downward slope to the orifice; the completion of the circle of the curtain by the union of the horns of the flaps at the ends of the orifice; and fræna of fair size, the posterior frænum especially.

The lower flap (ileo-cæcal). The breadth and direction of the lower flap are regulated largely by the direction of the ileum near its ending. The ileum generally approaches the junction with moderate obliquity upwards, with early junction below, or it may be without early junction (case 14, fig. 12); sometimes with great obliquity and earlier junction below (cases 3, fig. 5; 8, fig. 10; 12; 20, fig. 15); sometimes almost vertically at its lower border, with very early junction below (cases 17; 22, fig. 16); sometimes the direction is nearly transverse (cases 5 and 7); sometimes the direction is downwards (cases 4, fig. 6; 7; 9, fig. 9; 16, fig. 13); and sometimes the ileum not only ascends but curves round to the inner part of the back of the great intestine (cases 10 and 17).

Thus, when the ileum passes very obliquely upwards, the lower flap is elongated vertically (broad), is nearly in the direction of that side of the ileum, and is flush with the wall of the cæcum till near the orifice. But when the ileum descends, the lower flap rises towards the orifice at an obtuse angle with both ileum and cæcum, and, although of less breadth, has the appearance of a valve proper. As seen in the Table, the lower flap is generally broader than the upper; in fully-formed valves the two flaps may be of equal breadth (as in cases 11, 12, and 15); with a descending or transverse ileum, the lower is generally narrower than the upper (as in cases 5, 9, and 16). It is seen, therefore, from the above, that great breadth of the lower flap does not necessarily imply corresponding perfection of the valve, but only great obliquity of the ileum.

As to outline, the lower flap is unsymmetrical; anteriorly, it has the form of the lower half of a broad ovoid, carried down by the cæcum; posteriorly, it is prolonged and gradually narrowed to join the posterior frænum. The attached margin is generally entirely convex in front, generally concave posteriorly on the upper half. When the ileum passes far back, the lower flap is long and much bent, the whole of the attached margin concave towards the great intestine. In case 9, in which the ileum descends, both flaps are uniformly convex at their attached margin, the posterior horn of the lower flap going almost straight up to join in the frænum.

The horns of the lower flap both run up to join the upper, so as to complete the circle of the curtain. The free margin of the anterior horn turns backwards, rounding the broad anterior end of the orifice, forming the narrowest part of the curtain, $\frac{1}{6}$ to $\frac{1}{4}$ inch broad, adhering to the sharp anterior frænum on its surface. The completeness of the circular curtain is accomplished posteriorly by the horn of the lower flap joining the upper flap broadly where the frænum begins. The line of junction may be for $\frac{1}{2}$ inch forwards and outwards to the sharp posterior end of the orifice, the free edge of the horn passing a little under the general concave edge formed by the continuity of the upper flap and the frænum. The prolongation of the lower flap backwards enables it to lay hold of the broad posterior frænum, and renders the frænum much more efficient. This, at the same time, implies a narrow end to the orifice posteriorly. One or both of the horns of the lower flap may fail to reach up to join the upper flap. In case No. 18, fig. 14, the posterior horns do not meet by $\frac{1}{4}$ inch, the posterior frænum wanting, the competency of the valve doubtful. In case 19, the posterior horns do not meet by $\frac{1}{2}$ inch, both the fræna wanting, the valve evidently incompetent; in case 16, fig. 13, both horns of the lower flap fail to reach the upper by $\frac{1}{4}$ inch, the fræna undersized, but the valve looks efficient. In the latter, the ileum descends.

The upper flap (ileo-colic) need not be regarded otherwise than as one of the crescentic folds of the colon, its adaptation as part of the valve consisting in its increased breadth, and in its extending across to the next longitudinal band to form a posterior frænum. The ordinary crescentic folds of the colon are known not to pass round and round, but usually only between neighbouring longitudinal bands, where their horns cease. Sometimes a valvule passes, more or less narrowed, some way beyond a band; and when two occur in the same plane, they are either distinct, or become narrowed where they cross the band. But this greatly developed crescentic fold, including the upper flap of the valve and both fræna, extends from the anterior band to the postero-external band, crossing and attached to the postero-internal band at the posterior end of the orifice. This great fold has an uninterruptedly concave free edge, but a special increase in breadth is seen at the attached margin opposite the orifice, the attached margin showing a notch at each side where the uniformly and deeply convex margin of the valve-like part descends to meet the attached margin of the fræna, as seen in fig. 4.

The angle at which the upper flap meets the wall of the colon varies; sometimes it is almost a right angle, but the plane of the flap generally slopes downwards towards the free margin. This slope contributes to the perfection of the valve. The amount of the fall is usually about ¼ inch but may be ½ inch. It is generally greater than usual when the posterior frænum slopes much downwards in its outward course across the colon. The upper surface of the flap is generally a little concave vertically, varying in that respect, but the concavity is less than the vertical concavity of the lower flap.

The *posterior frænum* is usually much broader and longer than the anterior. It may have the usual crescentic form of other valvulæ coli, but is generally broadest internally from its direct continuity with the upper flap of the valve, giving the continuously concave free margin. The descent of this frænum in its course outwards varies, sometimes there is little if any, sometimes the fall may be as much as an inch, giving a corresponding obliquity to the frænal furrow seen on the surface behind. It often bifurcates before reaching the postero-external band, and may pass a little beyond the band, in that case marking off the limit of the cæcum on the outer side.

The *anterior frænum* extends from the anterior end of the upper flap forwards to the anterior longitudinal band, the corresponding furrow, seen on the surface, marking off the limit of the cæcum on the inner part of the front. It is generally narrow, less than half the breadth of the posterior frænum, but may be as broad. It occasionally gains in breadth at the middle, and may, like the posterior, bifurcate before terminating at the band. In some of the cases noted below, an accessory fold descends obliquely on the walls of the colon, to the upper flap of the valve, or to the broad posterior frænum, or to both. As the measurements of the breadth of the fræna, given in the Table, are taken at the middle, they do not show the greatest breadth. The breadth of the posterior varies generally, but not always, with that of the upper flap of the valve; the anterior gains in breadth at the middle more frequently than the posterior.

Ileo-colic Orifice.—I give the form and sizes as seen in my series of dried specimens. This method preserves the relation of the parts well, but perhaps some little shrinkage may have slightly increased the breadth of the orifice. As to *form,* the orifice usually has the shape of a narrow ovoid, as seen in fig. 4, rounded at the anterior end, sharp-pointed at the posterior end, the lower edge more concave than the upper. With a large upper flap and very descending posterior frænum, the posterior part of the upper edge of the orifice may be convex downwards. The more pointed form at the posterior end is primarily owing to the direction of the ileum and to the junction being well to the back, rendering a large posterior frænum more effective than a large anterior frænum would be. The relation of the postero-internal band to this end of the orifice is an interesting point in the adaptations here. In all my translucent specimens this band, as seen in fig. 4, passes up entire at or close to the posterior end of the orifice, giving a firm parietal attachment to the flaps of the valve at their meeting. No longitudinal muscular fibres are visible at the more abrupt anterior end of the orifice. In one case (No. 14, fig. 12) in which the ileum has very little direction upwards and no previous contact with the cæcum, the posterior band is seen to pass up on the back of the last half inch of the ileum.

As to *direction*, the axis of the orifice is usually horizontal, or nearly so; with a very descending posterior frænum, the axis inclines downwards and backwards. When the cæcum is held fairly, the orifice looks outwards, but in cases in which the ileum curves more round to the back, the orifice may look as much forwards as outwards. The orifice looks also a little downwards, owing to the projection of the upper flap beyond the lower. This overlapping is normal, is usually for about $\frac{1}{4}$ inch, but may be more. Thus, in cases Nos. 7, 8, 9, 11, 15, 16, 18, 20, the overlapping was for $\frac{1}{4}$ inch; in No. 6, for $\frac{5}{12}$; in No. 12, $\frac{1}{2}$; in No. 17, $\frac{3}{8}$; in No. 13, $\frac{1}{3}$; in No. 14, $\frac{1}{6}$; in No. 21, $\frac{1}{8}$ inch; in Nos. 10 and 22, the two lips of the valve projected equally, but were diseased.

As to the *size* of the orifice, the Table shows considerable variation in what may be called fully-formed valves, but the size of intestine has to be taken into account. The largest orifice in these specimens (No. 7) has length 2 inches, breadth $\frac{3}{4}$ inch, but the intestines are very large; the smallest (No. 21) has length $\frac{3}{4}$, breadth $\frac{1}{6}$ inch; a fair average may be given as length $1\frac{1}{4}$ to $1\frac{1}{2}$ inches, breadth $\frac{1}{2}$ inch. That is in healthy adult specimens. As the result of disease, the orifice may be found much contracted, from cicatrization after ulceration, or from thickening probably following on typhlitis. In case No. 17, in which the margins are thickened by disease, the orifice is $\frac{7}{8}$ by $\frac{5}{8}$ inch; but in the other cases more or less diseased (Nos. 10, 13, 14, and 22) the size of the orifice had not yet been reduced.[1]

It is not easy to estimate exactly the *relative size of the ileo-colic and pyloric orifices*, although that is interesting in relation to the getting through of foreign bodies that have passed the pylorus. The aperture of the pyloric curtain is generally oval vertically, varying in size from enough to admit a large finger to enough to admit the point of the forefinger. The largest coin that can be sent by moderate pressure along the œsophagus, can be easily slipped through the moist pylorus. The ileo-colic orifice has a more definite shape, maintained by its fræna, but would admit of some change of shape under pressure. An average diameter of 1¼ to 1½ by ½ inch would seem to give a larger capacity to the ileo-colic orifice than that of the pylorus. Putting aside the foreign-body point of view, as not admissible, and although the bulk of the ordinary intestinal contents is usually lessened in the course of the small intestine, it would seem an unnatural arrangement were undigested masses, taken as food and allowed to pass the pylorus, liable to be imprisoned in the small intestine.[1]

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[1] Among the cases of stenosis of the valve referred to by Mr Treves in his valuable work on intestinal obstruction:—"In two of the cases the valve just admitted the point of the finger. in another it would only give passage to a No. 9 catheter."—*On Intestinal Obstruction: Its Varieties, with their Pathology, Diagnosis, and Treatment*, by Frederick Treves, F.R.C.S., London, 1884, p. 262.

Competency of the Ileo-colic Valve. It is not to be inferred from the number of cases of incompetent valve, proved or inferred, noted below and in the Table, that that condition is frequent. On the contrary, I believe it to be a rare condition,—that competency, the prevention by the valve of reflux of the contents of the great into the small intestine, is the normal condition. The exceptions occur in cases of abnormal cæcum, such as those here noted, which have been collected during many years because they are exceptional; and in cases where disease has in part destroyed the valve, without having produced stenosis. There seems, however, to be a vague general impression that enemata can pass to the small intestine, and I have met even with the impression that the so-called "stercoraceous" vomit, in cases of strangulated hernia, is from the great intestine, in forgetfulness that the seat of strangulation is above the valve.

My opinion that the valve is normally competent is not founded merely on its anatomy, but on experiment by inflation. Before removal from the body, inflate the parts through an opening made in the ileum some inches from the colon, and tie the ascending colon or constrict it with the hand. On withdrawing the inflation tube the ileum collapses, and it will be found that air cannot be made to pass back from the great intestine, under either gentle or severe pressure with the hand. This demonstration has long been a familiar one in my lecture-room and dissecting-rooms, and I can recall very few instances in which my prediction of the result was not verified. In two such failures the valve was afterwards found to be diseased (cases Nos. 10 and 13). When the parts are out of the body on the dissecting table, the result is less complete, the injury to the peritoneum binding the commencement of the colon and binding the ileum to the great intestine has slackened the attachments of the valve, but even then the regurgitation is very partial, if at all.

It has been replied to me that that was only in the dead body; but does that affect the result? Any little action the few circular muscular fibres in the valve can exert in the living body will be rather in the direction of tightening the valve. A muscular action more likely to assist the valve in preventing reflux would be the severe contraction of an empty ileum opposite the area of junction. The idea of being able to relax the valve, so as to allow enemata to pass, by narcotizing the patient, or by narcotizing the valve locally by carbonic acid injected per rectum, or formed from chemicals introduced into the rectum, seems far-fetched; and all such views are met by the fact that the valve is competent in the dead body.

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[1] Mr Treves (*loc. cit.*, p. 320) mentions a specimen, in the London College of Surgeons Museum, "showing a dessert-spoon seven inches long and with a bowl 1½ inches wide lying fixed in the cæcum." A normal ileo-colic orifice would just pass such a bowl.

It need not be doubted that, in trying large tepid water enemata, a small quantity of water may at first get past the valve. Supposing, in the semi-erect posture, the cæcum to be nearly filled, for which about a teacupful would suffice, the water might fall over the edge of the lower flap of the valve; or with the body lying on the left side, the same might happen with even a less quantity of water. But that could not accomplish what is wanted; some amount of force is wanted to overcome the supposed obstruction in the small intestine, and as soon as the current of the necessary volume of water sets in, the flaps of the valve could not but be pressed together, and backward passage prevented. In the case of the valves of the veins, I found[1] that the first double valve could be passed by forcible injection with water, the force, however, being too much weakened to overcome the succeeding valve; but the fact remains, as shown by the experimental inflation in the dead body, above described, that, even in great distention and under great pressure, the ileo-colic valve, normally, does not allow of backward passage. I heard once of a case in which turpentine contained in an enema was said to have appeared in the vomit, but on making careful inquiry the case broke down into one of hearsay. The argument for the trial of large enemata of water, or air, or carbonic acid gas, appears to amount to this, that they will likely be useful in any obstruction in the colon, or if the case is one of ileo-colic intussusception; but, in regard to the small intestine, that they can be of avail only on the chance of the patient having an abnormal ileo-colic valve.

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[1] "On Jugular Venesection in Asphyxia, Anatomically and Experimentally considered, including the Demonstration of Valves in the Veins of the Neck." —*This Journal*, 1856.

TABLE GIVING THE MEASUREMENTS, IN INCHES AND PARTS OF AN INCH,

Case.	Fig.	Appendix.			Cæcum.			Diam. of Colon.	Diam. of Ileum.
		Place of Origin.	Length	Diam.	Form.	Length	Diam.		
1	1	Fœtus. At end.	1	1/10	Fœtus. Funnel.	½	¼	¼	¼
2	.	Fœtus. At end.	1¾	⅛	Fœtus. Cone bent back.	¾	½	½	⅜
3	5	At end, below.	3	⅓	Funnel.	1¼	1	2	1¼
4	6	At end, below. Blocked.	2	○	Funnel.	4½	3	2	1⅛
5	7	At end, below. Blocked.	3½	○	Funnel.	4½	3	3	1¼
6	8	At end, internally.	4	⅓	Funnel, turned in.	5	3¼	3	1¼
7	.	At end, above. Blocked.	4½	¼	Bent cone, curved in and up.	8	4½	5	1¼
8	10	Below.	3½	¼	Fundus blunt.	3¼	2¾	3	1⅛
9	9	Below, partly blocked.	1¼	⅛	Fundus blunt.	3	3	3	1
10	.	Below.	3½	⅙	Fundus blunt and bifid.	2½	2½	2½	⅞
11	11	Nearly below.	5	¼	Broad, bilobed behind.	2¼	3	3	1¼
12	.	Back, at middle	3	¼	Blunt cone, notched on inner side.	2¼	2½	2½	1
13	.	Back, near middle.	2½	⅓	Same as last.	3½	2½	3	1⅛
14	12	Back, below middle.	4	¼	Same as last.	2¾	3¼	3	1
15	.	Inner side, high up.	2	⅙	Blunt cone.	2	2	1¾	1
16	13	Inner side, from funnel.	4¾	⅛	Bent cone. Also a funnel.	3	2½	2½	1
17	.	Back, high up, from funnel.	4	⅛	Blunt cone.	3½	2¾	2½	1
18	14	Inner side.	¾	⅓	Blunt cone.	3	3	3½	1½
19	.	Back, high up.	¾	⅙	Blunt cone.	1½	2	1¾	1
20	15	Back, at middle.	.	1/10	Blunt cone.	3½	3½	3¼	1
21	.	Back, at middle. Blocked.	2	○	Broad. Bilobed below.	2¼	2¾	2¾	1⅛
22	16	Back, below middle. Disappeared.	○	○	Broad. Bilobed below.	2¼	3½	3¼	1
23	.	.	6	⅙	.	.	.	.	.

Note in regard to some of the measurements and definitions in the Table.—1. *Appendix:* Diameters taken at middle; in dried specimens probably a little less than in natural condition. 2. *Cæcum:* Lengths are the mean from limits before, behind, and within cavity. 3. Diameters of cæcum and colon are the mean of the transverse and antero-posterior. 4. *Direction of Ileum;* whether the obliquity upwards is medium or great. This and diameter of ileum to be looked to as bearing on *height of area of junction.*

AND THE CONDITION OF THE PARTS IN THE CASES OF VARIATION DESCRIBED.

Direction of Ileum.	Height of Area of Junction.	Ileo-colic Valve. Breadth of flaps.		Ileo-colic Orifice.		Fræna of the Valve.				Condition of Ileo-colic Valve.
						Posterior.		Anterior.		
		Lower.	Upper.	Length.	Breadth.	Length	Breadth.	Length	Breadth.	
.	.	.	.	.	.	.	.	.	.	.
Medium up.	Average.	Average.	Average.	Average.	Average.	Long.	Good.	Short.	.	Fully formed.
Greatly up.	$1\frac{3}{4}$	1	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{12}$	○	○	Quite incompetent
Descends a little.	$1\frac{1}{2}$	$\frac{1}{6}$	$\frac{1}{4}$	$1\frac{1}{2}$	$\frac{5}{12}$	○	○	○	○	Quite incompetent
Nearly transverse.	$1\frac{1}{2}$	$\frac{1}{6}$	$\frac{1}{12}$	$1\frac{1}{2}$	$1\frac{1}{2}$	○	○	○	○	Quite incompetent
Very little up.	$1\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{3}{4}$	$\frac{5}{12}$	1	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{5}$	Fully formed.
Descends a little.	$1\frac{3}{4}$	$1\frac{3}{4}$	2	2	$\frac{3}{4}$	3	$\frac{3}{4}$	2	$\frac{1}{3}$	Very fully formed
Greatly up.	2	$1\frac{1}{2}$	1	$1\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{4}$	$1\frac{1}{2}$	$\frac{1}{4}$	Fully formed.
Descends a little.	1	$\frac{4}{12}$	$\frac{5}{12}$	$1\frac{1}{2}$	$\frac{1}{2}$	$1\frac{3}{4}$	$\frac{1}{4}$	$1\frac{1}{2}$	$\frac{1}{6}$	Undersized. Comp
Medium up. Much back.	$1\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{3}$	$1\frac{1}{2}$	$\frac{5}{8}$	○	○	Full.	$\frac{1}{12}$	Incomp. Diseased
Medium up.	$1\frac{3}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$\frac{1}{2}$	2	1	$1\frac{1}{2}$	$\frac{1}{3}$	Very fully formed.
Very much up.	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$\frac{1}{3}$	$1\frac{1}{2}$	$\frac{3}{4}$	.	$\frac{1}{3}$	Very fully formed
Very little up.	$1\frac{1}{4}$	$\frac{2}{3}$	1	$1\frac{1}{2}$	$\frac{1}{2}$	.	$\frac{1}{2}$	.	$\frac{1}{4}$	Incomp. Diseased
Very little up.	$1\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	$\frac{5}{12}$	2	$\frac{1}{3}$	2	$\frac{1}{4}$	Comp.? Some disease.
Very little up.	$1\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$	1	$\frac{1}{4}$	.	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{6}$	Fully formed.
Descends.	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	$\frac{1}{2}$	1	$\frac{1}{5}$	$\frac{3}{4}$	$\frac{1}{12}$	Medium. Seem competent.
Very much up. Also back.	2	$1\frac{1}{2}$	1	$\frac{7}{8}$	$\frac{5}{8}$	2	$\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{6}$	Fully formed. Som disease.
Medium up. Ileum large.	2	$1\frac{1}{4}$	$\frac{1}{2}$	$1\frac{1}{3}$	$\frac{5}{8}$	○	○	.	$\frac{1}{24}$	Probably incomp.
Medium up.	$1\frac{1}{3}$	$\frac{3}{4}$	$\frac{1}{6}$	$\frac{7}{8}$	$\frac{5}{8}$	○	○	○	○	Imperfect. Incomp
Very much up.	$1\frac{3}{4}$	1	$\frac{7}{8}$	$1\frac{1}{2}$	$\frac{5}{8}$	2	$\frac{1}{3}$	2	$\frac{1}{6}$	Fully formed.
Medium up.	$1\frac{1}{3}$	$\frac{5}{6}$	$\frac{3}{5}$	$\frac{3}{4}$	$\frac{1}{6}$	$1\frac{1}{3}$	$\frac{1}{3}$	$1\frac{1}{2}$	$\frac{1}{3}$	Fully formed.
Very greatly up.	$2\frac{1}{4}$	$1\frac{1}{4}$	$\frac{1}{2}$	$1\frac{3}{8}$	$\frac{5}{12}$	2	$\frac{1}{2}$	○	○	Medium. Diseased Probably incomp
.	.			.	.	.	.	.	.	.

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5. *Breadth of flaps of Ileo-colic valve*: is the greatest breadth. 6. *Ileo-colic orifice*: probably slightly less in moist condition. 7. *Fræna of the valve*: breadths taken at middle, which is usually considerably less than where they join the flaps. 8. *Condition of Ileo-colic valve*: Incompetency was either ascertained or is manifest. Observe that the cases of incompetency were either cases of very abnormal cæcum, or cases of diseased valve. ○ signifies that the part was absent; • that the observation could not be made.

EXPLANATION OF THE PLATE.

All the figures belong to human anatomy. The first four are designs, the remaining twelve are from Nature, selected from among my collection of specimens showing variation of the cæcum and appendix. All the figures reduced to $\frac{1}{6}$ except fig 1.

FIG. 1.—From fœtus near full time, about natural size, but cæcum may be more elongated. Appendix seen to be, relatively, long and wide. Colon and cæcum have not attained full size in proportion to small intestine. *a, p, x*, indication of point of distinction between future cæcum and appendix.

FIG. 2.—Diagram of supposed antero-posterior section, mainly to show how downward and forward growth of cæcum gives acquired fundus of usual adult cæcum, and leaves original apex and appendix at back of cæcum. Ileum should not be seen in this section, but is introduced to show limit of cæcum and section of the two flaps of ileo-colic valve ; $\frac{3}{4}$ inch allowed for breadth of upper flap, *u, v*, 1 inch for lower, *l, v* ; upper flap seen to project beyond lower ; both flaps a little concave towards great intestine ; vestigial fossa indicated below mouth of appendix.

FIGS. 3 and 4.—Posterior and anterior views of typical adult cæcum and appendix ; in fig. 4, anterior wall removed. The three longitudinal bands, anterior, postero-external, and postero-internal, marked respectively, *a, b*,—*p, e, b*,—and *p. i, b* ; *s, s, s*, the three saccules of cæcum, internal, inferior, and posterior ; *v, f*, vestigial fossa, seen to be bounded by union of bifurcations of the three bands, appendix arising from the fossa. In fig. 3, *p, f, f*, posterior frænal furrow, marking limit of cæcum ; ordinary place of origin and position of ascending stage of appendix seen, and most frequent position of second stage, showing itself pendulous and free from behind ileum. In fig. 4, *u, v*, upper flap, *l, v*, lower flap of valve, both flaps represented diagrammatically, upper as seen from above, lower as seen from below ; neither quite of full breadth ; form of orifice and connexions of horns of lower flap seen ; only beginning of anterior frænum seen ; *p, f*, posterior frænum, marked off from upper flap at attached margin, but continuous at free margin ; posterior horn of both flaps seen to be attached at postero-internal band ; most of two ordinary valvulæ coli seen at upper part of figure, attached at narrow end at longitudinal band. Inner half of this view belongs properly to inner side of cavity.

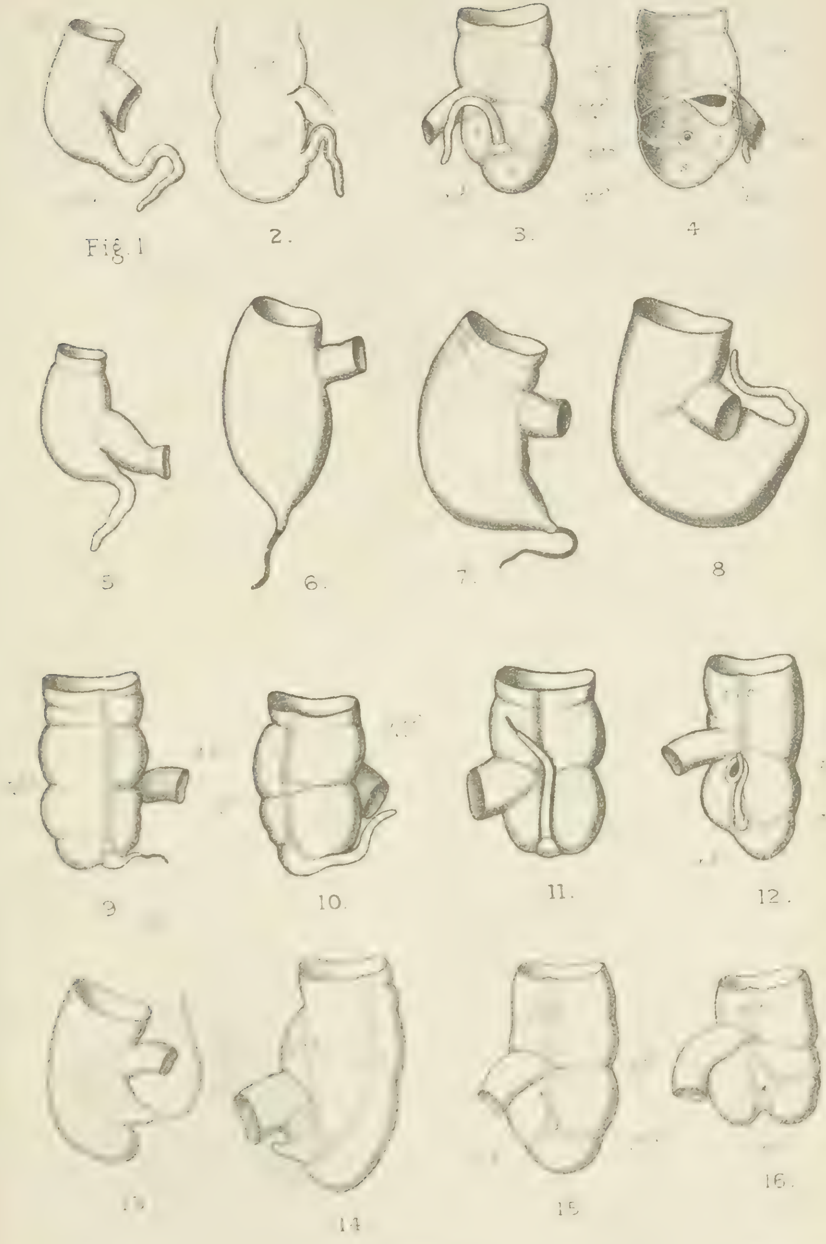
FIGS. 5, 6, 7, and 8 show cæca of the tapering or funnel shape, with appendix continued, being retention more or less of the fœtal form.

The remaining figures, 9 to 16, show *cæca* of the acquired bluntly-ovoid or bulbous form ; fig. 16, the fundus bifid, being deeply notched below at anterior band ; fig. 12, the most usual form, gently notched towards inner side at anterior band.

These figures show various conditions of the *appendix*, as to place of origin, direction, length, width, obstruction, and disappearance. In figs. 9, 10, and 11, arising at or very close to lowest part of fundus ; in figs. 13 and 14, at inner side ; in fig. 13, from a funnel-like remainder of original apex of cæcum, not yet flattened into a vestigial fossa. Figs. 13 and 14 show contrast in length of appendix ; figs. 11 and 15 show contrast in its width ; figs. 12 and 15 show it entirely hidden behind cæcum ; in fig. 12, rolled up at end ; in fig. 11, concealed also behind colon ; figs. 6, 7, and 9 show partial blocking ; and fig. 16 shows its entire disappearance.

Other points shown in these figures, 9 to 16, are, in fig. 9, *p. f, f*, posterior frænal furrow continued so as to be seen on outer side, and there marking off limit of cæcum, unusual ; in fig. 10, *c, f*, furrow of an incidental crescentic fold, liable to be mistaken for the frænal furrow ; in fig. 10, *a, f, f*, anterior frænal furrow, marking limit of cæcum ; same in fig. 9, but shorter from different position of anterior band ; posterior frænal furrow seen in figs. 11, 12, 15, and 16 ; figs. 12, 15, and 16 show arrangement of the three longitudinal bands surrounding the small bulging vestigial fossa from which appendix arises ; the × on fig. 16 shows where there is a trace of the vanished appendix.

(*To be continued.*)



VARIETIES OF THE APPENDIX VERMIFORMIS, CÆCUM, AND ILEO-COLIC VALVE IN MAN.

II.—A NEW INSTRUMENT FOR THE TREATMENT OF DIFFICULT STRICTURES OF THE URETHRA.

By A. G. MILLER, F.R.C.S.E., Surgeon to the Edinburgh Royal Infirmary.

(*Read before the Medico-Chirurgical Society of Edinburgh, 5th July* 1893.)

MR PRESIDENT,—In cases of tight stricture of the urethra the possibility of passing an instrument depends on the nature and construction of the instrument employed, the skill and experience of the operator, and the condition of the patient. The instrument may be flexible or rigid, soft or hard, light or heavy. It may have a short curve or a large sweeping curve. It may be bulbous at the point, or conical, and so on. My experience of over a quarter of a century of hospital work in one capacity or another, from house-surgeon to surgeon, has led me to prefer a rigid heavy instrument, with a somewhat open curve, and a fine probe point, in cases of tight or difficult stricture. Of so-called "impassable" strictures I have had my share, I suppose; but as the term is really a relative one, I do not like to use it. For what is impassable to one surgeon may not be so to another; what will not admit one instrument may admit another; and what cannot be overcome at one time may be at another. I would speak, therefore, merely of difficult and tight strictures.

In difficult cases I have frequently found that a favourite instrument of the late Prof. Spence's passed readily when no other would enter the stricture at all. It was a Syme's staff with a very fine probe point. On more than one occasion, when I had got this instrument into and through a very difficult stricture, complicated by retention of urine, I wished that by pushing the staff on I could dilate the stricture and so get in a good-sized catheter. But this could not be done on account of the shoulder of the staff, which caught abruptly at the entrance to the constriction. Once I seized the opportunity of the staff being *in situ*, got the patient's consent to an operation, performed perineal section at once, and managed to cure a very bad stricture right away. (The patient, a "cabby," went out with the perineal wound healed in three weeks, and comes up occasionally to the hospital to have a No. 15 passed.) But perineal section is not always advisable. It occurred to me, therefore, that if I got a similar instrument made with a wedge shaft such as Sir Joseph Lister has in his bougies, instead of the abrupt shoulder, I would find it useful. I am glad to be able to state that such an instrument, of which a specimen is before you, has proved very useful in my hands and in those of some of my colleagues.

The instrument may be described as follows:—It is of steel and solid, it has a fine probe point, and begins to enlarge about two inches from the point, when it gradually increases from less than a No. 1 English to No. 12. The curve is gradual or open, being the same as that adopted by the late Mr Syme for his external urethrotomy staff. The handle is flat, and therefore the direction of the point of the instrument can always be known. In fact, it is only a modified Syme's staff. The instrument is guided, never forced. It is almost dropped into the urethra, its weight causing it to pass down quite easily. I have not found it liable to catch in follicles or folds of the mucous membrane, provided it is left pretty much to itself. When an obstruction is met with the bougie should be withdrawn a short distance in the usual manner, and gently passed on again with the point in a slightly different direction. Of course, with such an instrument no force must be employed, or a false passage would be the immediate consequence. But force, or much manipulation either, is not necessary, for when the point of the bougie "takes" the stricture it does so easily, slipping in with a wonderful facility, and I must say I have seldom failed with it.

Once the bougie is fairly in the stricture it should be gently pushed on till the point is well through the stricture (which can be ascertained by the finger in the rectum if necessary), then the wedge is brought into play, the instrument being firmly pushed on, and the stricture dilated enough to let a good-sized bougie or catheter be introduced into the bladder.

I never commence the treatment of a case of retention of urine from stricture with the catheter. I prefer the bougie, (1) because it is safer, the catheter being more liable to convey sepsis to the bladder, (2) because it is easier managed, being probe-pointed, heavier, and more rigid than the catheter. My experience is that by using a bougie first in such cases the employment of a catheter may sometimes be dispensed with : for, as is well known, the dilatation of a stricture removes spasm, and the patient can then make water freely. In my opinion it is quite safe to allow him to do so, provided no blood has been drawn by the use of the bougies.

In recommending this instrument to surgeons for the easier treatment of tight and difficult strictures of the urethra, I claim that it has four advantages or good points.

1. It is rigid, and therefore the surgeon can guide it if necessary, and can always ascertain where its point is by observing the relative position of the other parts of the instrument, and by the finger in the rectum also if necessary (as advocated by Mr Syme).

2. It has a fine probe point, which enables it to enter a very small tight stricture (as originally intended by Mr Spence).

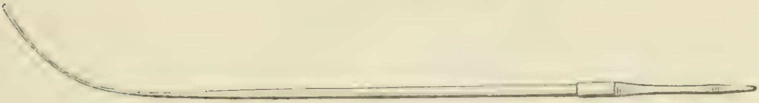
3. It is heavy. The weight of the instrument I look upon as a matter of great importance, for it enables the surgeon to dispense with all force. My practice is to permit the instrument to *drop* into the urethra. I have already stated that when it enters the stricture it generally does so *easily*.

4. It has a powerful wedge on the shaft. The advantage of this is evident. If this instrument enters the stricture and is pushed

on gently but firmly (much force is not required), the surgeon may be able to pass a full-sized bougie or catheter immediately after the withdrawal of this pioneer.

No. 1.—Syme's Staff.

No. 2.—Syme-Spence Staff.



No. 3.—Syme-Spence-Lister Bougie.

It will be evident that there is nothing absolutely original about this instrument. I have only taken Mr Syme's ideal of a rigid instrument, with Mr Spence's addition of a fine probe point, and added to that Sir Joseph Lister's principle of the wedge shaft. I have all the greater confidence in recommending to surgeons this Syme-Spence-Lister bougie.

III.—PROLAPSE OF THE FEMALE URETHRA.

By Prof. A. R. Simpson, President of the Royal College of Physicians, and of the Obstetrical Society of Edinburgh.

(*Read before the Obstetrical Society of Edinburgh*, 10*th May* 1893.)

During the past session two cases of prolapse of the urethra in the female have come under observation in the Buchanan Ward. The condition is not of frequent occurrence, and has received rather scant notice in gynecological text-books. I have thought it well, therefore, to bring the cases before the Society, as they have been recorded in the Ward Journal by Dr Lawson Dick, Buchanan Scholar. For the examination of the preparations and description of the microscopical appearances I have to thank my assistant, Dr J. C. Webster.

"Mrs R., æt. 52. Sent in by Dr Gray of Dundee. Admitted 17th November 1892, complaining of tumour at orifice of urethra. In her history she states she reached the menopause ten years ago, and had no discharge till within a fortnight ago, when, as the result of a fall from a chair, she had a rather smart hæmorrhage. On calling in her doctor he informed her of the presence of a urethral tumour.

"Before this, patient had hardly ever known a day's illness. She is mother of a family of six, all of whom are alive and well.

"Patient is a stout, healthy-looking female. Mammæ and abdomen show marked signs of multiparity, and abdominal palpation is negative. On inspection of pudenda a red vascular tumour, with smooth unbroken surface, is seen surrounding the urethral orifice. When manipulated it is not at all tender. Further examination reveals the ordinary senile changes, and that the body of the uterus is lying to the front, freely movable, and not at all enlarged.

"*November* 24, 1892.—Patient anæsthetised, and prolapsed mucosa of urethra was removed by cautery. Patient rapidly recovered, and was dismissed on 1st December, the part being well healed, and the cicatrix having puckered well in."

"The removed portion consists of a complete ring of the prolapsed urethra, ovoid in shape, about $\frac{3}{4}$ inch long and $\frac{1}{2}$ inch wide.

"The urethral mucosa is irregularly folded, somewhat hypertrophied, and varying in thickness at different parts.

"On microscopic examination the epithelium is seen to be entirely transitional. Under the general surface spaces lined with this epithelium are seen; they are sections of deep recesses in the mucosa.

"The sub-mucous tissue is denser than normal. In several places connective tissue proliferation and leucocyte exudation around the vessels are seen.

"Extreme vascularity characterises the connective tissue. The capillaries are dilated and new ones seem to be forming in several parts. Blood is also effused everywhere in large or small quantities outside the vessels. In the largest effusion exudation fibrin-formation is seen in progress.

"The small arterioles are also somewhat dilated. Their endothelium, as well as that in the capillaries, is swollen in different parts, and some cells are seen in active division.

"Several of the vessels show considerable thickening and increased density of the connective tissue outside the endothelium."

"Mrs M., æt. 72. Sent in by Dr M'Ewan of Prestonpans. Patient was admitted to Ward 24 on 8th March 1893, complaining of pain on passing water. This had lasted for a fortnight previous to admission. The history is that for some twenty years past she has suffered from occasional dysuria, and when going about she also had bearing-down feelings and discomfort, which she attributed to coming-down of the womb. Till within a fortnight ago, however, her health had always been excellent; but at that time, quite unexpectedly, blood began to flow from the pudenda. This was so free that she had to call in her doctor, who informed her of the presence of a urethral tumour, and recommended her for admission.

"Sexual history shows nothing noteworthy. She has had five children and one miscarriage. Labours were easy and puerperia normal. She reached the menopause at the age of 52, the period from which she dates her trouble.

"On physical examination patient is seen to be healthy and fairly well nourished. Mammæ and abdomen show usual signs of multiparity. On inspecting pudenda a large vascular growth, considerably larger than a cherry, is seen at the base of the vestibule. There are sloughy, grey-looking patches on the surface. Round the attached base of the tumour the urethral mucous membrane is found to be everted, the orifice itself being found to lie on the anterior aspect of the tumour. On palpation there is no marked tenderness. Further examination reveals well-marked senile changes in the vagina, whilst the body of the uterus itself is found lying to the back, somewhat atrophied.

"*March* 9, 1893.—Patient was anæsthetised, and the tumour, with the displaced fold of urethral mucous membrane, was removed by a Paquelin cautery. A pad was placed against urethral orifice.

"*March* 18, 1893.—Patient dismissed cured."

"The amount of prolapse is small. The characteristics presented by it are very similar to those shown in the other specimen.

"The caruncle is about the size of a marble. It consists of connective tissue in which are blood-spaces of various sizes, some of which are dilated capillaries, and others mere effusions in the connective tissue. In small quantities blood is, as well, scattered throughout the entire mass. In various parts the effused blood is in a state of organisation. Around many of the vessels is seen leucocyte exudation and connective tissue proliferation.

"On the outer surface of the greater part of the caruncle is squamous epithelium. A small portion is covered by the prolapsed urethral mucosa, consisting of transitional epithelium."

Although, as I have hinted, this subject has been somewhat overlooked by systematic writers, it has been dealt with by Winckel in his treatise on *Diseases of the Female Urethra and Bladder*,[1] and more recently Prof. Kleinwächter of Czernowitz has drawn attention to it in an exhaustive essay,[2] which gives a sum-

[1] In Billroth and Luecke's *Handbuch der Frauenkrankheiten*, iii. 366.

[2] "Der Prolaps der weiblichen Urethra," *Zeitschrift für Geburtshülfe und Gynækologie*, xxii. 40, 1891.

mary of recorded cases, and discusses their pathology, symptoms, and treatment.

PATHOLOGY.

Kleinwächter has found records of 50 distinct cases, besides notices of others that bring the number up to about 100. Of 39 where the ages were given, he finds 20, = 51·08 per cent., occurring in children under 15 years of age; 7, = 17·90 per cent., during the reproductive age from 22 to 37 years; and 12, = 31·02 per cent., in elderly women beyond the menopause, from the 47th to the 75th year of life. Perhaps this tendency to greater frequency among children than among women during their reproductive or later years may account to some extent for the scanty attention that has been given to this complaint, for the greater number of them will come under the observation of the general practitioner or of the surgeon, rather than of the gynecologist.

Kleinwächter describes two different varieties of urethral prolapse, according as the inversion of the mucous membrane begins —1, immediately within the urethral opening; or, 2, higher up in the canal.

1. In the former case, where the inversion begins with eversion of the mucous membrane bordering on the meatus, we have the condition to which he thinks the designation of *prolapsus urethræ* ought strictly to be confined.

2. He applies Winckel's designation of *inversio cum prolapsu mucosæ urethræ* to the second group of cases. In these the mucous membrane becomes loosened from its subjacent tissue higher up in the canal, and may have to travel some distance in its inverted condition before the summit of the fold appears at the orifice and a definite prolapse occurs. According to him, the distinction between the two varieties is of importance in relation to the kind of operation likeliest to give satisfactory results in the different varieties.

The cases I have brought forward now are both instances of true prolapse, the inversion having begun in both at the lower limit of the canal. In the first there was no notable change in the tissues of the pelvis to account for the production of the prolapse. There were only the usual senescent changes, and these have sometimes been supposed to bring about a relaxation favourable to the occurrence of the displacement. But there was absence of any of the unhealthy discharges, or other pathological products or processes, such as cystitis, calculus, etc., that in some cases were cited as the causes of the mischief. It seems in this instance to have been produced quite suddenly, as the result of the fall the patient sustained when in stepping from the window-sill to a chair her foot slipped and she fell on the floor. The inversion affected the whole circumference of the canal equally at the sides, in front, and behind.

In our second case, though the mucosa was inverted all round, the posterior wall had undergone the greatest degree of displacement, and the cause of the prolapse was evidently the presence of the urethral caruncle. This was of the size of a cherry, and had a broad attachment, so that at first sight it appeared as if the red mass, composed of caruncle and everted mucosa, formed a single tumour; and it was only after some careful manipulation and the use of the sound that the actual relation of the structure was recognised. It is easy to understand that the presence of such growths should have been found accountable for the production of the prolapse in some of the recorded cases; and in other cases of urethral caruncle I have observed some degree of eversion of the mucosa, though this is the first, so far as I remember, in which it was so well marked.

Symptoms and Diagnosis.

In some instances prolapse of the urethral mucosa gives rise to little or no trouble, and it may be that, especially in elderly women, the absence of any distinct distress leads to their passing unnoticed or unrecorded. The symptoms that call attention to the condition are pain in the seat of displacement, aggravated by exercise or by evacuation of the bladder. Sometimes there is difficulty of micturition as well as pain with the effort. Or bleeding, even profuse or repeated, may lead the patient to seek for advice. In other cases the presence of a painless but unusual structure is observed by the patient, who thinks she is the subject of some kind of tumour.

The diagnosis is made by inspection of the pudenda. A cherry-red growth is seen projecting from the urethra. Sometimes it has become œdematous and more pale; sometimes it is more congested and purple. It may even be gangrenescent, or show erosions or ulcerations on the surface. In some cases of old standing the surface takes on an epidermic character. The protruded mass varies in size from that of a bean to that of a walnut, or even of a hen's egg. In some it is sensitive to the touch, but not in all. It may be seen to be due to a displacement of the whole circle of the mucosa, or it may be partial. Kleinwächter notes that in 34 cases the prolapse was complete in 24, and partial in 10. In the partial cases it may either be the anterior, or posterior, or a lateral wall that protrudes. The full exploration requires the introduction of the sound or catheter, which has to be passed in with care, where the mucous membrane is very sensitive or has become swollen or gangrenous, or where the displacement is complicated with the presence of growths, such as the urethral caruncle.

Prognosis.

In some cases where the prolapse has been replaced, and the patient kept for a time at rest, and warned against making any exertion which would involve straining of the abdominal muscles, the displacement has not reappeared. But in most cases it is reproduced. In some the attempt at reduction of the displacement fails. Though in some of these the prolapse gives no further trouble, in others it goes on increasing in extent, and may become the seat of œdematous, inflammatory, ulcerative, or gangrenous changes which add to the patient's distress, and even develop elements of danger.

TREATMENT.

If reposition of the displaced structures can be carried out, yet, as we have just seen, something additional will usually be required if the displacement is to be hindered from recurring. Sometimes packing of the vagina has been employed; sometimes a catheter has been kept in the bladder for a time. Again, astringents have been applied, or caustics, or the mucous membrane has been partially cauterized. Occasionally a cure has been effected by cutting out wedge-shaped portions of the displaced tissue; and Benicke[1] succeeded in one case by constricting the urethral orifice in its lower third with a catgut thread, and touching the lower part of the urethra some days later with a 2 per cent. solution of nitrate of silver. In the most pronounced cases, however, such expedients are, for the most part, unsatisfactory, and the distinct indication is given for removal of the displaced tissues. There are three different methods that have been adopted for effecting the removal:—

1. *Use of the Ligature.*—The structures to be removed may be made to slough off by strangling them with a ligature round a catheter passed through the canal. But although this procedure has been adopted even in some recent cases, it does not commend itself to the present-day surgery. As Kleinwächter points out, it contradicts all the conditions of aseptic surgery, is a cause of great and prolonged pain and discomfort, and implies a protracted cure. An improvement on this method of using the ligature is that adopted by Gaillard Thomas,[2] who "in one case drew down the prolapsed tissue, passed a silk ligature through its base, and tied the two halves."

2. *Use of Knife or Scissors.*—It is better to remove the inverted tissues at once with the patient anæsthetised. Thus they may be cut off with a bistoury, or clipped off with a pair of scissors. In this case the operator must be prepared at once to bring the edges of the wound together with sutures running in the course of the canal. It was in this way that Benicke, *e.g.*, effected a cure in his third case; and in two cases recorded by Munde,[3] one of which occurred in an old woman of 75, the other in a girl of 9. Munde drew out the protrusion with a tenaculum, and after trimming it

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[1] *Zeitschrift für Geburtshülfe und Gynäkologie*, xix. 305, 1890.

[2] *Diseases of Women*, 4th edition, p. 120.

[3] *The American Journal of Obstetrics*, xxiii. 615, 1890.

with scissors close to the edge of the meatus, stitched the edge of the urethral mucous membrane to the vestibular mucosa by a running suture of fine catgut, with the result that union by the first intention followed, and the patients were speedily cured. Kleinwächter maintains that in the variety described as Inversion with prolapse of the urethral mucosa, excision is the only safe way of dealing with the case, and that it may be necessary first to split up the urethra to get full access to the inverted fold. When the inverted portion has been cut off and its base sutured, the wound in the urethral wall is easily closed. This operation would seem to me preferable to Emmet's[1] proposal to make a button-hole opening in the urethra, so as to get at the redundant mucosa, notwithstanding that he has himself reported good results from the procedure, and that it is endorsed both by Thomas and by Baker.[2]

3. *Use of the Thermo-Cautery.*—I am not convinced, however, that even in the variety referred to the removal of the redundant tissue could not best be effected with the Paquelin knife. The alleged danger of undue contraction resulting from the employment of the Paquelin cautery or the galvano-caustic wire is very much hypothetical. I have so often recognised the ease and safety with which urethral caruncles can be removed with the cautery knife when the entire circle of the mucosa might be removed without any consecutive stricture, that in both of the cases I have recorded I had no hesitation in making use of it for amputation of the prolapsed tissues. The operation was easy, the recovery speedy, and the results have left nothing to be desired.

IV.—ON AMPUTATION IN CASES OF GANGRENE OF THE LOWER EXTREMITY.

By Francis M. Caird, M.B., F.R.C.S. Ed., Assistant-Surgeon, Royal Infirmary, Edinburgh.

(*Read before the Edinburgh Medico-Chirurgical Society, 5th April* 1893.)

There is much to be learned in the study of a somewhat slow-going case of gangrene of the lower limb, more especially in regard to the question of the evolution of our methods of amputation. We may observe, for example, the manner in which the gangrenous process slows its speed, wavers, and may even receive a check, just anterior to the vascular anastomosis of an articulation. It may, starting from the great toe, halt for a short time at the ball, then advance once more, and travel onwards over the dorsum of the foot, settling down for a space anterior to the tarso-metatarsal or ankle joints. Should the process become arrested here, it is interesting to see how Nature spares the more vascular sole, and with a line of demarcation cuts off the dead from the living, as she forms handsome skin flaps analogous to those which we make in the amputations associated with the names of Hey, Chopart, and Syme. If, however, the gangrene should still continue to spread, we see a similar arrest occurring about the upper third of the leg or below the knee joint, at the sites where we amputate at the seat of election, or through the condyles after the method of Carden.

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[1] *Principles and Practice of Gynecology*, 3rd ed., p. 752.

[2] "Diseases of the Bladder and Urethra," in Mann's *System of Gynecology*, ii. 484.

If we make an antero-posterior section of such a gangrenous limb, we may further observe that the death of the soft parts and bone extends usually to a higher level than that of the integument. Nature practises both the circular and flap methods of operation, according to the distribution and vitality of the vascular supply. The skin flaps are preserved because of the exceeding richness of their vascular anastomosis, which permits of them receiving their blood from a higher source than that affected by the gangrene or its cause. Moreover, we find that the skin flaps retract from off the dead muscular fascia. Owing to their gradual but great retraction, when the dead bones are eventually cast off, a conical stump remains, which may, however, cicatrize better than we at first anticipated. A reference to surgical plates—for example, those of the War of the Rebellion issued by the U.S.A. Government—will serve to recall most of the above points.

It is obvious from the foregoing that when the question of amputation arises in a case of chronic gangrene, we are generally justified in disarticulating or dividing at the joint, just above the line of demarcation. A difficulty arises, however, in the case of *old people with feeble heart and tissues*, if the gangrene have extended above the ankle. Here we must at once ascend to the nearest vascular network, viz., to the knee, if we wish a satisfactory result. An amputation through the leg only courts a fresh death of tissue. We have, therefore, three courses open in the way of operation,—disarticulation at the knee joint, Carden's amputation through the condyles of the femur, and Gritti-Stokes' above the latter.

The chief difficulty is the tendency of the anterior flap to slough. It will be noted that its blood-supply is mainly interfered with when we perform Carden's operation, since we raise the flap from off the patella. On the other hand, in the modified operation of Gritti we retain the anterior surface of the patella with its vascular anastomosis intact; and although we divide the femur at a higher level, the mortality in these days is not thereby appreciably increased.

Disarticulation through the joint is open to the objection that we require very long flaps in order to cover in the huge condylar expanse of the femur. In raising the anterior flap we must sever the anterior tibial recurrent artery, and so endanger the vitality of the flap.

Theoretically, therefore, in old people with gangrene or weak health we may expect the best results from the Gritti-Stokes' operation. Practically a somewhat limited clinical experience of such cases has also driven me to a similar conclusion. I have three times disarticulated at the knee joint. The operation was performed as rapidly as possible by making a circular sweep well below the level of the tibial spine; two vertical incisions enabled one to raise the antero-posterior flaps; the patella and semilunar cartilages were left untouched. There were two recoveries; but it was interesting to note that in every instance the rectangular corners of the anterior flaps necrosed as sharply as if the knife had rounded them off *secundum artem*,—a lesson which requires no moral. In one case of Carden's amputation the anterior flap sloughed,—the only example I have seen of this occurring, as it was also the only amputation for gangrene I have performed by this method. The patient eventually sank, but the gangrene did not extend. In two cases of Gritti-Stokes, in old ladies aged 70, the anterior flap preserved its vitality completely, although one patient eventually succumbed to cardiac failure and bronchitis.

V.—SOME PRACTICAL RESULTS FROM THE CHEMICAL EXAMINATION OF THE CONTENTS OF THE HEALTHY STOMACH.

By ALEX. LOCKHART GILLESPIE, M.D., F.R.C.P. Ed., Medical Registrar, Edinburgh Royal Infirmary.

(From the Laboratory of the Royal College of Physicians, Edinburgh.)

(*Read before the Medico-Chirurgical Society of Edinburgh on 18th January* 1893.)

(*Continued from p.* 257.)

EXPERIMENT IX.—The only other experiment I was able to perform on this patient, owing to his departure to America, was not as successful as the former ones.

He had his ordinary breakfast at 8·45 A.M. of bread, coffee, and fish; then at 1·30 P.M., four and three-quarter hours after, he ate eight ripe greengages, spitting out the skins and stones.

The first examination was made half an hour after, the fluid obtained being simply broken down fruit, seemingly with very little liquid added. It had no gastric smell.

Both the filtered and unfiltered contents were estimated, with the following result:—

	Unfiltered.		Filtered.	
Total acidity,	·918	per cent.	·414	per cent.
Combined acidity,	·558	„	·198	„
Free acidity,	·36	„	·216	„
Total chlorine,	·3744	„	·312	„
Combined chlorine,	·1704	„	·0936	„
Free chlorine,	·048	„	·0936	„
Fixed chlorine,	·156	„	·1248	„
Total solids,	7·2	„	4·55	„
Ash,	·16	„	·15	„

	Unfiltered.	Filtered.
Organic solids,	7·04 per cent.	4·4 per cent.
Proteids,	...	·2 ,,
Albumen,	...	·19 ,,
Albumose,	...	Trace.
Peptone,	...	Trace.
Acid albumen,	...	None.

An hour after, only a very small quantity of fluid was in the stomach, and was much more dilute. It still had a fruity smell.

To estimate the different constituents the fluid recovered had to be diluted with three parts of distilled water, and the result calculated.

As far as I could manage, the results are accurate, and are in detail as follows:—

	Unfiltered.	Filtered.
Total acidity,	·432 per cent.	·324 per cent.
Combined acidity,	·027 ,,	·108 ,,
Free acidity,	·405 ,,	·216 ,,
Total chlorine,	·3744 ,,	·4056 ,,
Combined chlorine,	·2148 ,,	·2808 ,,
Free chlorine,	·0936 ,,	·0312 ,,
Fixed chlorine,	·066 ,,	·0936 ,,
Total solids,	2·1 ,,	1·3 ,,
Ash,	·07 ,,	·1 ,,
Organic solids,	2·03 ,,	1·2 ,,
Proteids,	...	A trace.

Uffelmann's test for lactic acid gave a positive result each time, but this was probably most part due to the vegetable acids present, malic, citric, etc. The amount of sugar, unluckily, could not be estimated.

The principal feature of the experiment was the large amount of acid, both free and combined, present, only a very small proportion of which consisted of chlorine. And that, notwithstanding, the patient felt no discomfort therefrom, although he told me that, if the fruit had been unripe, he would assuredly have suffered great pain.

Further Researches.

One or two corroborative analyses were made on other patients, but as I could only procure the stomach contents with some difficulty, the experiments were necessarily limited.

A male patient, about 30 years old, was in the Infirmary, suffering from a chronic nervous dyspepsia, in character very similar to that of the preceding case.

The stomach contents were evacuated one hour after tea,—a meat tea, consisting partly of proteids. The analysis was performed in the same way as in the preceding, both of the filtered and unfiltered material.

	Filtered.		Unfiltered.	
Total acidity, . .	·198	per cent.	·252	per cent.
Combined acidity, .	·18	„	·234	„
Free acidity, . .	·018	„	·018	„
Lactic acid, . . .	·04272	„	·078	„
Acetic acid, . .	*nil.*		*nil.*	
Butyric acid, . .	·018	„	·018	„
Total chlorine, . .	·3744	„	·4056	„
Combined chlorine, .	·13728	„	·156	„
Free chlorine, . .	*nil.*		*nil.*	
Fixed chlorine, . .	·23712	„	·2496	„
Sugar, . . .	1·404	„	·527	„
Alcohol, . . .	(?)		(?)	
Total solids, . .	3·4	„	3·8	„
Ash, ...	·1	„	·1	„
Organic solids, . .	3·3	„	3·7	„
Proteids—				
Albumen, . . .	·0867	„	...	
Peptone, . . .	·383	„	...	
Albumose, . . .	·18	„	...	
Acid albumen, . .	(?) trace.		...	
Organic Solids—				
Sugar, ...	1·404	per cent.	...	
Proteids, . . .	·6497	„	...	
Chlorine combined, .	·13728	„	...	
Undetermined, . .	1·20902	„	...	
Total, .	3·3	„		

A comparison of the amounts present in this case with those in the preceding experiments shows that the total solids are less, that the proteids especially are smaller in amount, and that therefore the combined acidity is also lower. The proportion between the filtered and unfiltered contents is the same in both. In the present case the total is less, but the fixed chlorine is above the amount in the previous case at the half hour.

At all points, then, this experiment corroborates the previous ones with regard to the proportions between the constituents.

One point, however, ought to be noted, the presence of a comparatively large quantity of lactic and butyric acids in the wash, due probably to some fermentation in the stomach.

A patient, Nansen, with a dilated stomach, was given a meal of bread and milk alone; half an hour after, the contents were removed and analysed.

	Filtered.		Filtered.
Total acidity, . .	·162 %	Total chlorine, . .	·3432 %
Combined acidity, .	·162 „	Combined chlorine, .	·0687 „
Free acidity, . .	*nil.*	Free chlorine, . .	*nil.*
Lactic acid, . .	·0933 „	Fixed chlorine, .	·2745 „

	Filtered.		Filtered.
Butyric acid, . .	(?) trace.		
Acetic acid, . .	*nil.*	Proteids, . . .	4·47 %
Acetates, . .	Present.	Albumen, . .	2·43 ,,
		Albumose, . .	·391 ,,
Total solids, .	10·3 %	Peptone, . . .	·541 ,,
Ash, ...	·56 ,,	Acid albumen, . .	Trace.
Organic solids, .	9·6713 ,,	Sugar, . . .	Present.
		Alcohol, . . .	Absent.

They were very concentrated, the percentage of proteids very high, with only a small amount of acidity and a very considerable quantity of peptones and albumoses. On investigation, however, I discovered that the remains of his previous meal had probably not entirely left his stomach at the time of taking the bread and milk. Here, again, there was a considerable amount of lactic acid present. On testing for the other organic acids, there was a slight trace of butyric, none of acetic; but on testing for acetates they were found to be present in small quantities.

Through the kindness of Dr Mackenzie, resident physician in Dr Brakenridge's Wards, I was enabled to analyse the gastric contents of a case in which there was a considerable quantity of acetic acid present.

I received the contents of his stomach on two successive days, drawn off 3½ hours after tea time,—the first day after bread and milk, the second after bread and milk and a salt herring.

I tested them both in the filtered and unfiltered state. The details are as follows (No. 1 is after bread and milk; No. 2 after bread, milk, and a herring):—

	Filtered.		Unfiltered.	
	1.	2.	1.	2.
Combined acidity, ...	·306	·45	·288	·468
Total acidity, ...	·432	·504	·45	·504
Free acidity, ...	·126	·054	·162	·036
Lactic acid, ...	...	...	...	...
Acetic acid, ...	·0324	·0228	·0372	·0348
Butyric acid, ...	...	...	...	...
Total chlorine, ...	·4368	·5304	·4992	·5304
Combined chlorine, ...	·19344	·1568	·21216	·156
Free chlorine, ...	·0936	·0312	·1248	·0312
Fixed chlorine, ...	·14976	·3432	·16224	·3452
Total solids, ...	2·78	4·	3·52	4·08
Ash, ...	·3	·38	·24	·4
Organic solids, ...	2·20656	3·4952	3·06784	3·524
Proteids, ...	·776	·86	...	...
Albumen, ...	·18	·34	...	...
Acid albumen, ...	Trace.	Trace.	...	...
Albumoses, ...	·37	·1	...	...
Peptones, ...	·226	·33	...	...
Sugar, ...	·92	1·02	...	...

From this it will be seen that even a herring makes a considerable difference in the acidities, and that especially the fixed chlorine rises. Everything else rises in proportion, the solids and proteids, etc. Although the acetic acid present in a free state is not in large amount, it was calculated from the difference between the free chlorine and free acidity—no lactic or butyric acids being present—there was a considerable quantity in the form of acetates, and some probably combined with proteids also, judging by the depth of colour formed on using Uffelmann's reagent or the liquor ferri perchloridi as tests.

This patient was the subject of a very chronic dyspepsia with hyperacidity,—the hyperacidity, however, being due more to organic acids than to excess of chlorine.

(*To be continued.*)

VI.—STUDIES IN FŒTAL PATHOLOGY AND TERATOLOGY.

(SECOND SERIES.)

III. ALLANTOIDO-ANGIOPAGOUS TWINS—PARACEPHALUS DIPUS ACARDIACUS.

By J. W. BALLANTYNE, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, Minto House, and on Midwifery and Diseases of Women, Medical College for Women, Edinburgh.

(*Read before the Obstetrical Society of Edinburgh*, 10*th May* 1893.)

IN a previous communication the characters of fœtuses belonging to the sub-group paracephalus dipus cardiacus were stated, and I have now to consider those of a very closely allied variety of deformed twin—*paracephalus dipus acardiacus.*

SUB-GROUP II.—PARACEPHALUS DIPUS ACARDIACUS.

Historical Notes.—Acardiac paracephali would seem to be more commonly met with than those provided with a heart, for whilst I was able to gather together only seventeen examples of the latter I have collected forty of the former, including the specimen described at the meeting of this Society in December 1892. It does not, however, necessarily follow that the acardiac occur more frequently than the cardiac, for it may be that several examples of heart-bearing paracephali have, in the absence of details concerning the state of the placenta, been placed amongst other forms of monstrosity, whilst all the acardiac specimens would, from the striking defect in the vascular system, be almost certain to be recorded, and to be grouped with the allied types of acephalic and amorphous fœtuses.

The first specimen of this variety of paracephalic monsters seems to have been that described by Goeller in 1683. Saviard recorded another in the first half of the eighteenth century, and Curtius, Marrigues, Lecat, Büttner, Odhelius, and Kähler described cases in the second half of the same century. Sixteen specimens were put on record between 1800 and 1850 by the following writers:—Borgnoni (1806), Brodie (1809), Clesius (1812), Boutin (1817), Rossi (1820), Laroche (1823), Peschier (1826), Rodati (1827?), Svitzer (1829), Tonnelè (1829), Seiler (1833), Embleton (1841), Jackson (1847), Hempel (1850), and Calori (1850). In 1855 Luton fully described a fœtus which very closely resembled that shown to this Society in December 1892, and since 1855 specimens have been observed by Desormeaux and Gervais (1860), Poppel (1862), Genth (1868), Calori (1869), Moldenhauer (1873), Lusk (1875–6), Nitot (1876), Meïmaroglu (1879), Breus (1882), Taruffi (1882), Koch, Donat, Calori (1885), and Doran (1889).

Synonyms.—The earlier writers, as a rule, contented themselves with describing their specimens as "monstrous fœtuses" or "abortions," whilst more recent observers adopted the terms "acephalic" or "acardiac fœtus." Goeller, for instance, entitled his communication "Abortus humani monstrosi hist. anatom;" Rossi used the phrase "Descrizione d'un feto mostruoso," Hempel that of "De Monstris Acephalis," and Poppel that of "Ueber herzlose missgeburten." Calori recognised that the term acephalic could not be correctly given to these acardiacs, and proposed to call them "cefalo-acardi." Taruffi in 1882 introduced the designation "Paracephalus dipus acardiacus," and in this way grouped all these specimens together in a separate and clearly defined class.

CLINICAL DETAILS.

In a few of the recorded cases (Nos. 31, 35, and 39) no clinical details are given, and in some others (2, 11, 12, 15, and 17) I am unable to give any facts with regard to the history of the confinements, having found it impossible to consult the original reports. In all the other cases, however, the clinical history was more or less fully given. No doubt the monstrous fœtus was always the product of a plural pregnancy; but in certain cases (11, 19, and 20) the clinical details alone were not sufficient to determine this. Of the remaining thirty-seven cases, in three the pregnancy resulted in the birth of triplets, one of which was monstrous (Nos. 1, 8, and 16), and in thirty-four it ended in the birth of twins, one normal in form, the other monstrous.

Maternal History.—Details concerning the general health of the mother were seldom given; but in three instances (27, 30, and 38) it was stated that she was a healthy woman, whilst in one (40) she was delicate and had suffered much from chronic bronchitis. The mother's age was 20 in Nos. 13 and 21; 24 in No. 22; 26 in No. 32; 27 in Nos. 3 and 27; 29 in No. 8; 30 in No. 30; 34 in Nos. 5 and 36; and 35 in No. 40. She was a i.-para in Nos. 13, 22, 23, and

32; a ii.-para in No. 21; a iii.-para in Nos. 27 and 38; a v.-para in No. 8; a vii.-para in Nos. 5 and 40; and a "multipara" in Nos. 30 and 36. With regard to previous obstetric experiences details were seldom forthcoming, but in no case did I find in the record earlier plural pregnancies, and in Nos. 8, 27, 36, 38, and 40 it was distinctly stated that the gestations had all ended in the birth of single infants, and that the labours had been normal.

The pregnancy which resulted in the birth of an acardiac paracephalic fœtus was, as has been said, always plural, and it would appear that it usually terminated prematurely. Labour came on before the sixth month in Nos. 14 and 33; at the sixth month in Nos. 20 and 22; between the sixth and seventh months in Nos. 19 and 26; at the seventh month in Nos. 1, 8, 10, and 24; between the seventh and eighth months in No. 21; at the eighth month in Nos. 3, 9, 13, 27, and 29; between the eighth and ninth months in Nos. 32 and 36; at or about the ninth month in Nos. 5, 18, 38, and 40; and at the full term in No. 4.

In three cases (1, 3, and 13) the mother attributed the monstrosity to an impression received during pregnancy. There was hydramnios in Nos. 5, 27, and 30, and in No. 27 it was noted that the liquor amnii was bad-smelling. Abdominal pain during pregnancy was noted in Nos. 8, 27, and 40; the mother was dropsical in No. 30, and suffered much from bronchitis in No. 40. The normal twin was almost invariably the first to be born (Nos. 3, 4, 5, 6, 21, 22, 25, 27, 29, 30, 32, 34, 36, 37, 38, 40); but in two cases (Nos. 9 and 26) it was definitely stated that the monster was the first to appear. In the triplet cases the deformed infant was the second born in No. 1, and the third to be expelled in No. 8. In some of the cases the order of birth was not stated, and in others I have not been able to consult the originals. The time that elapsed between the birth of the normal infant and that of the monster was forty-five minutes in No. 27, about one hour in No. 40, two hours in Nos. 25 and 36, five hours in No. 34, and seven hours in No. 32. Further details of the confinement were seldom given: in Nos. 21 and 27 the deformed twin came as a footling; it was a breech in No. 22; in Nos. 5, 20, 30, and 32 the labour was delayed, and in the last-named the mother had an eclamptic fit immediately after the birth of the monster. In No. 40 there was alarming hæmorrhage before and after the delivery of the paracephalic twin. Post-partum bleeding from retained pieces of membranes and placenta was noted in No. 36. In some instances the monstrous fœtus had to be removed by the hands or by forceps; thus in No. 37, whilst the fœtus was being extracted the legs separated from the trunk, and the latter had to be delivered by means of the forceps. The placenta was expelled along with the deformed infant in Nos. 27 and 36; but it had to be artifically removed for grave symptoms in Nos. 32 and 40. In No. 8 the mother was very weak and ill after delivery, but ultimately recovered; and in No 9 a uterine mole was expelled five days after the labour. It is probable that in the other cases the puerperium was normal. In one case (No. 8) there is an interesting note with regard to the later obstetric history: it is to the effect that on two subsequent occasions the mother gave birth to twins, and in both instances one of these twins was slightly deformed (contorted feet and curved tibiæ).

Paternal and Family History.—In only one case (No. 40) was the health of the father noted, and in that it was good. In the same instance there was no family history of plural or otherwise abnormal labours; but in No. 16 the grandmother and aunt had both given birth to twins.

Infantile History.—The deformed twin was necessarily always dead-born, but in only one instance (No. 28) was it in a state of advanced maceration. The other twin was in every case well formed; but it was dead-born in Nos. 8, 9, 10, 13, 24, 27, and 28, and it died during labour in No. 5. It was, however, born alive in Nos. 3, 6, 7, 30, 32, 38, and 40; but in No. 3 it only lived a short time, and in No. 40 it was weakly and died at the fourth month.

It was not quite normal in No. 33, having the foot twisted at right angles to the tibia; in this instance also a complete account of the dissection of the infant is given. The twins (or triplets) were probably in every case of the same sex, but information on this point was wanting in Nos. 15 and 39, and was not very definite in Nos. 6, 16, 19, 20, 26, and 31. Both were males in seventeen cases (3, 4, 7, 8, 10, 12, 13, 17, 21, 22, 23, 24, 27, 30, 32, 36, and 40), and females in fourteen instances (1, 2, 5, 9, 11, 14, 18, 25, 28, 29, 33, 34, 35, and 38).

MORBID ANATOMY.

I. OF THE FŒTUS.

a. General External Appearances and Measurements.—Fœtuses belonging to the sub-group paracephalus dipus acardiacus had invariably an appearance that was only remotely human. The deformity was nearly always greatly increased by the marked subcutaneous œdema which existed. The writers who have described specimens have used various expressions in order to convey to the reader's mind some idea of the form of the infant. Nearly all have noted that the upper part was more monstrous in appearance than the lower, and have described it as conoid (14), pyramidal with base above (17), polylobate (5), etc. The head and thorax were generally fused together without the indication of a neck, and the appearance thus produced was compared to a monk's hood or cape or cylindrical mass (Nos. 4, 10, 20, 29, 30, 33, etc.) In some cases the body was divided into two parts (an upper, made up of head and thorax, and a lower, consisting of pelvis and lower limbs) by a deep constriction, as in my specimen (40), and in Nos. 25 and 28;

in other instances the fœtus had the shape of a large skate or ray (32), or constituted a reniform mass (26).

In size these fœtuses were generally less bulky than their co-twins, and they were also smaller than was normal for the age of intra-uterine life arrived at. In one case (14) the deformed fœtus measured 3 inches 9 lines (9·5 cms.) in length, whilst the normal twin was 6 inches; in another instance (13) it was stated that the monster had the usual length; and in No. 33 the normal twin measured 21 cms. in length and the monster 17 cms. In other cases the total length measured something between the two first-named extremes: it was 38 cms. in Nos. 6 and 32; 35·5 cms. in No. 7; 33 cms. in Nos. 10 and 38; 32 cms. in Nos. 5 and 36; 28 cms. in No. 40; 27 cms. in No. 21; 25 cms. in No. 28; and 18 cms. in No. 27. The weight was not often stated: it was 103 grms. in No. 27, 1000 grms. in No. 36, 1615 grms. in No. 38, and nearly 4 lbs. in No. 21. In one case (8) the monster was larger and heavier than either of the two fœtuses born with it.

b. State of the Subcutaneous Tissue.—It is probable that in every case the subcutaneous tissue all over the body was œdematous; this fact was specially dwelt upon in Nos. 1, 3, 7, 8, 13, 21, 24, 25, 26, 27, 30, 31, 32, 34, 36, 37, 38, 39, and 40. In other instances the observers were struck by the presence of serous cysts of varying size in the subcutaneous cellular tissue. Very common situations for these were the back and sides of the head and neck (Nos. 1, 4, 5, 6, 8, 9, 10, 18, 19, 20, 26, 29, 32, 38, and 40), and the posterior and lateral thoracic walls (Nos. 13, 21, and 24). In other cases (Nos. 3, 29, 34, 37, etc.) the cysts were universally distributed throughout the subcutaneous tissue. The adipose tissue was described as scanty in one or two instances (*e.g.*, No. 38), whilst in Nos. 33 and 36 it was said to be large in amount. The subcutaneous cysts varied in size from that of a pea or hazel-nut to that of a cocoa-nut; they had a smooth lining membrane, and they were filled with a clear pale yellow sero-albuminous fluid. The largest cysts usually lay at the back of the neck.

c. State of the Head.—The presence of serous cysts in the subcutaneous tissue of the head and neck has been already mentioned, and no doubt some observers were led by this to conclude that hydrocephalus existed in these cases. True hydrocephalus was, however, sometimes present (Nos. 1, 4, 9, 12, 14, 15, 18, 20, 25, 28, 32, and 40). More commonly the cranium was very small but osseous, and covered with a thick layer of greatly œdematous tissue, so that whilst the head was as large or larger than normal the cranium was no bigger than that of a hen (No. 18), and sometimes had its size compared to that of a nut (22, 26, 30). The cranium was also very small in Nos. 3, 21, 23, 27, 31, and 35; it was hemicephalic in Nos. 28 and 36; hemicephalic and cyclopic in No. 38; greatly deformed in No. 7; and several of the vault-bones were absent in Nos. 5 and 6. The presence of hairs on the scalp was sometimes noted (*e.g.*, in Nos. 16, 25, 26, 27, 30, 32, 36, 38, and 40); their absence was specially mentioned in Nos. 13 and 24.

The condition of the cranial contents varied considerably. The best developed brain was found in No. 24; but even in it the corpus callosum, fornix, septum lucidum, and mammillary tubercles were absent. Usually the cerebrum was very defective (Nos. 1, 3, 8, 9, 12, and 29); it was macerated in Nos. 10, 14, 17, 27, 32, 33, and 34; it was absent in Nos. 7 and 36; and it constituted a small whitish mass in No. 30. The cerebellum was normal in No. 4; it was present in Nos. 5, 37, and 38; present but diffluent in Nos. 32 and 40; very small in Nos. 24 and 29; and it was absent in Nos. 7, 9, and 28. The medulla oblongata was normal in No. 4, was very small in No. 24, and was absent in Nos. 7, 9, and 40. The cranial nerves were not often described; they were said to be normal in No. 10, but in No. 4 the absence of the optic and olfactory was noted. In No. 36 there were two optic nerves but no commissure, and the other cranial nerves were not seen; whilst in No. 38, the fifth pair, traces of the vagi and the oculo-motor nerves were the only ones present.

The bones of the basis cranii were usually present, but in Nos. 34 and 38 the sphenoid and ethmoid were defective; there was no vomer or palate in Nos. 34, 40, and others; and there was cleft palate in Nos. 10, 13, 25, etc. There was no foramen magnum in No. 40. The facial bones were said to be absent in Nos. 17 and 22, and to be not recognisable in No. 23; several of them were absent in Nos. 5 and 14; three only were present in No. 38 (malars and united maxillæ); no nasals were found in Nos. 4 and 13; and the lower maxilla was cleft in Nos. 13 and 23. Both the bones of the face and those of the basis cranii were fairly normal in No. 36. The eyes, ears, nose, and mouth were almost always very imperfect. The eyes were, however, well developed in No. 36. The absence of eyeballs and eyelids was noted in Nos. 9 and 26; there were traces of eyelids, but not of eyeballs, in Nos. 13, 20, 35, and 40; the eyes were indicated by tracts of coloured skin in No. 11, by palpebral fissures in Nos. 17 and 19, and by closed eyelids in Nos. 12, 29, and 35; and the organs of vision were very rudimentary in Nos. 1, 13, 25, 30, 32, and 34. There was a single eye in No. 38. Traces of the nose were present in Nos. 1, 9, 10, 12, 17, 19, 20, 21, 33, 35, and 40; it was absent in Nos. 26 and 38; and the nasal was continuous with the buccal cavity in Nos. 23, 25, 32, 34, and 40. The ears, like the nose, were very imperfectly formed; they were both absent in Nos. 17 and 26, and one only was present in Nos. 9 and 19; they were deformed in Nos. 1, 4, 11, 13, 16, 20, 29, 30, 32, 34, and 38; and the external auditory meatus was noted to be imperforate in Nos. 4, 25, and 40. In No. 36, however, external ears with shallow meatuses were present. There was no mouth in No. 15; it was badly formed in Nos. 9, 19, and 20; and there was hare-lip in Nos. 10, 13, 24, 25, and 34. There was double hare-lip and cleft palate in No. 36. There was no tongue in No. 23; it was adherent to the lower jaw in No. 9, and rudimentary in No. 37; and in No. 25 it seemed to spring from the hyoid bone rather than from the arch of the buccal cavity. In No. 3 the only trace of a face was a scrotum-like appendage.

d. State of the Vertebral Column.—In many of the recorded cases the state of the vertebral column was very imperfectly given. There was no trace whatever of a spine in only two specimens—viz., in Luton's and my own (25 and 40). On the other hand, all the vertebræ were present in Nos. 3, 5, 20, 22, 27, 30, and 36. There were some additional cervical vertebræ in No. 32. There were only twenty vertebræ in No. 6, and nineteen besides the sacral in No. 21. Many were absent in No. 26, and the sacrum and coccyx were represented by irregular osseous nuclei. In No. 17 there were eight cervical, nine dorsal, and four lumbar vertebræ; in No. 31 there were three cervical, twelve dorsal, and five lumbar, whilst the sacrum was well formed; and in No. 38 there were seven cervical, ten dorsal, four lumbar, and five sacral. It was stated that the pelvis was normally developed in Nos. 6, 30, and 32; but in Nos. 25 and 40, through the absence of the sacrum, the iliac bones came into contact posteriorly. There was spina bifida in Nos. 6 and 28. The spinal cord was present, and probably normal, in Nos. 10, 12, 18, 20, 21, 22, 24, 27, 29, 30, and 36; but it was absent in Nos. 7, 25, 28, 35, and 40. There was a trace of the cord in No. 2; it was fluid in No. 32; and it was present, but much narrower in the cervical region than normal, in No. 23. The spine showed a scoliotic curve in Nos. 16 and 28, and there was both scoliosis and lordosis in No. 27.

e. State of the Upper Limbs.—The upper extremities were frequently entirely wanting (Nos. 2, 7, 12, 15, 16, 19, 23, 24, and 28), and in some other instances they were represented only by scapula and clavicle (Nos. 4, 26, 27, and 38). In a few cases the right upper limb was absent, or nearly so, and the left present (Nos. 30, 32, 35, and 37). In nearly all the other specimens the upper limbs, although present, were more or less defective (Nos. 1, 3, 5, 8, 9, 10, 11, 13, 14, 18, 20, 21, 22, 25, 29, 31, 33, 36, and 40), and the degree of imperfection varied from the absence of one or more fingers to that of the humerus, or radius, or ulna and radius. In many cases the arms were enclosed within the cephalo-thoracic mass, and in some instances (*e.g.*, Nos. 20, 36, and 40) the hands were clubbed. The specimens in which the upper extremities were most nearly normal were Nos. 1, 8, 10, and 29.

f. State of the Thorax and its Viscera.—In no specimen was there a heart; indeed, the absence of the heart is the distinctive character of this sub-group; but in No. 3 there was a possible trace of this organ, in Nos. 9 and 28 there was a structure regarded as the pericardium, and in No. 13 there existed a glutinous mass which the author thought might be a heart. The diaphragm was normal in Nos. 36 and 37; it was absent in Nos. 3, 5, 13, 14, 19, 22, 27, 32, 33, 35, 39, and 40; it was present, but membranous, in Nos. 4, 7, 10, 20, 29, 34, and 38; and it was also found, but in a more or less imperfect state, in Nos. 1, 6, 9, 13, 16, 20, 28, 30, and 31. The thymus gland was said to be absent in Nos. 3, 4, 6, 7, 10, 11, 12, 17, 24, 26, 29, 32, 35, 36, and 38; it was possibly present in Nos. 25, 28, 37, and 39. The thyroid gland was seldom noted; it was absent in Nos. 29 and 38. There were no lungs in the great majority of the specimens (Nos. 1, 2, 4, 5, 6, 7, 9, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 26, 27, 34, 35, and 40); but some traces of these organs were found occasionally (8, 10, 24, 25, 28, 30, 32, 33, 36, and 37), and the right was rudimentary and the left absent in one instance (29). In No. 38 there was one large pulmonary sac which filled the whole thoracic cavity, and sent a projection through the diaphragm into the abdomen. As was to be expected, the larynx and trachea were often absent, and when present were generally defective. The former was absent in Nos. 3, 20, 25, 26, and 28; present in Nos. 29 and 30; present, but defective, in Nos. 23, 32, 37, and 40; whilst the latter was absent in Nos. 6, 7, 8, 11, 12, 26, 28, 35, and 36; was present in Nos. 10, 29, 37, and 38: and was present, but rudimentary, in Nos. 1, 23, 25, 30, 32, and 40. The œsophagus was absent in the great majority of cases (1, 3, 4, 6, 7, 8, 11, 12, 24, 28, 29, 32, 35, and 40); it ended blindly in Nos. 10, 30, and 37; and in only two instances (25 and 36) did it communicate with the stomach. The presence of sympathetic ganglia was noted in Nos. 21, 24, and 38; the vagi were found in Nos. 24, 25, and 29; and in only one case was there a note concerning the thoracic duct,—it was absent in No. 17. It was sometimes mentioned that the thoracic cavity was filled with cystic or œdematous connective tissue (Nos. 4, 5, 7, 10, 21, 24, 27, 34, and 36). The osseous framework of the chest was often imperfect, the ribs, when present, seldom uniting in a normal way with the sternum. The ribs seem to have been present in their usual number in Nos. 3, 4, 7, 28, 32, and 36; some of them were wanting in Nos. 5, 6, 19, 21, 26, 27, and 38; and in one instance (25) they were all absent. The sternum was wanting in Nos. 27, 28, 30, and 36; it was present in Nos. 7, 20, and 32; and it was rudimentary in Nos. 4 and 21. It consisted of two halves, and was quite cartilaginous, in No. 38. The state of the great thoracic vessels will be considered elsewhere.

g. State of the Abdomen and its Viscera.—The abdominal organs were markedly defective in this sub-group of paracephalic fœtuses. In the cases in which the diaphragm was absent the abdomen and thorax formed one cavity (Nos. 3, 5, 13, 14, 19, 22, 27, 32, 35, 38, 39, and 40). There was no trace of the liver in the vast majority of instances (Nos. 1, 2, 3, 4, 5, 6, 8, 10, 14, 16, 18, 19, 21, 22, 24, 25 (?), 26, 27, 28, 29, 30, 31, 32, 34, 37, and 38); it was present, but small, and without a gall-bladder, in No. 9; it was also found in Nos. 33 and 36,—in the latter case the gall-bladder was present, but not the duct; and in Nos. 13, 20, 35, and 40 there were found glandular rudiments, which were probably hepatic in nature. The spleen was absent in Nos. 1, 2, 4, 5, 6, 8, 14, 20, 21, 22, 24, 27, 28, 29, 30, 31, 32 (?), 35, 37, and 38; it was present in Nos. 9, 10, 33, and 36, and perhaps so in Nos. 13 and 40; and there were two spleens in No. 34. The pancreas was stated to be absent in Nos. 3, 5, 6, 8, 13, 21, 22, 24, 27, 28, 29, 30, 31, 38, and 40, and its presence was doubtful in Nos. 20, 25, 36, and 37. The stomach was not so frequently wanting as were the organs above mentioned: it was present in Nos. 3, 9, 10, 13, 19, 20, 25, 30 (?), 32 (?), 33, and 34; but it was not found in Nos. 1, 2, 4, 5, 6, 8, 18, 21, 22, 24, 27, 29, 31, 38, and 40. The intestine was present, and probably complete, in only one instance (No. 9); in every other case it was markedly defective, and it was often also herniated. Almost every degree of deformity was met with, from that in which the whole bowel was present, but was imperforate (No. 34), to that in which there only existed a small loop of gut, blind at both ends. The cases in which the intestine was described as defective were 1, 2, 3, 4, 5, 6, 8, 10, 12, 13, 14, 16, 19, 21, 22, 24, 26, 28, 29, 30, 31, 32, 33, 35, 38, 39, and 40; the fact that some of the coils lay outside the abdominal cavity was mentioned in Nos. 4, 7, 13, 17, 21, 25, 27, and 40. It was noted in No. 29 that lymphatics were not found in the mesentery. The characters of the contents of the intestine were not often touched upon, but in No. 5 it was noted that the bowel contained an ash-coloured material, and not the normal green meconium.

The urinary organs were not so generally defective in this group of monsters as were the digestive. Both kidneys were present in Nos. 1, 3, 9, 10, 17 (in abnormal situation), 20, 22, 27, 28 (?), 29, 32, 33, 36, 37, 38, and 39; there was a single kidney in Nos. 2, 19, 21, 26 (?), 30, 34, and 40 (?); and both organs were absent in Nos. 4, 5, 6, 8, 24, 25, 31, and 35. In No. 5, however, there was a single organ, which the author (Lecat) called a kidney-liver. The absence of the ureters was specially noted in Nos. 4, 6, 24, and 28; and their presence in Nos. 23, 27, 30, 32, 34, 37, and 38. The urinary bladder was generally present (Nos. 5, 10, 12, 13, 20, 21, 22, 23, 24, 27, 29, 31, 34, 35, 36, 37, 38, and 40), although it was very small in size in Nos. 27 and 34; but its absence was observed in a few cases (4, 9, 17, 28, and 30). The suprarenal glands were not always mentioned, but in three cases their absence was noted (Nos. 4, 25, and 36), and in eleven their presence (Nos. 1, 3, 10, 12, 13 (?), 21, 23, 24, 27, 29 (small), and 32). The right alone was found in No. 38. No sympathetic ganglia were seen in No. 35. The presence within the abdomen of cysts, of dropsical fluid, and of gelatinous tissue was mentioned in Nos. 1, 7, and 13; there were signs of peritonitis in No. 28. With regard to the internal genital organs details were forthcoming in six out of the twelve cases in which the sex of the fœtus was female. The uterus was present in No. 5; the uterus, tubes, and ovaries were found in No. 38, but the ovaries were wanting in No. 20; and the uterus, ovaries, and tubes were present, but the vagina absent, in No. 34. The uterus and its annexa were not found in Nos. 25 and 28. Goeller noted that in his specimen (No. 1) the uterus was bicornuous. In the case of the fœtuses that were presumably of the male sex the testicles were absent in Nos. 6, 31, and 36; these glands were found, but were intra-abdominal in position or fused with surrounding parts, in Nos. 10, 12, 17 (one testicle only), 21, 22, 23, 24, and 32. The presence of the prostate gland was noted in No. 21, and its absence in No. 36.

h. State of External Genitals and Anus.—The external genitals were recognisable as those of a male in Nos. 6, 7, 8, 10, 24, 27, 30, 32, 36, and 40; in most of these instances the testicles were absent from the scrotum, and in Nos. 27 and 36 it was stated that the penis was imperforate. Female external genitals were apparent in Nos. 14, 19, 20, 28, 29, and 38. In cases 4 and 16 there were no traces of external genital organs at all. The anus was described as imperforate in Nos. 1, 5, 6, 13, 19, 25, 26, 27, 32, and 36; the rectum opened into the urethra by a small aperture in No. 21, and into the vagina in No. 38; and there was anal patency in four instances (Nos. 4, 20, 37, and 40). Details were not forthcoming in the other cases.

i. State of the Lower Limbs.—The lower limbs were in a few instances nearly quite normal (Nos. 12, 18, 22, 23, 25, 31, 33, and 37); but in a large number of cases they were deformed. In Nos. 1, 2, 3, 7, 8, 10, 14, 19, 20, 21, 28, 29, 34, 38, 39, and 40, some of the digits were wanting. In No. 1 both fibulæ were also absent; in Nos. 4, 5, 6, 7, 8, 9, 11, 16, 19, 21, 26, 27, 28, 29, 33, 36, 38, 39, and 40 there were other deformities, usually of the nature of contortions and clubbing. In Nos. 6 and 26 the right lower limb consisted of little more than the foot, whilst the left was less deformed. In three instances only (17, 30, and 32) the lower extremities were more or less fused together. It might, perhaps, be well to group these together as a sireniform variety of paracephalus acardiacus (p. sympus), were it not that such subdivisions are confusing. In No. 17 there were two femora with distinct acetabula, but the limbs were united at the knees, and these, together with the feet, had the same skin covering. In No. 30 the fœtus terminated inferiorly in a pointed tail-like structure, which ended in two feet; this structure was sharply flexed upon the abdomen, and could not be extended save by the use of violence. In No. 32, also, the lower limbs were fused together into a kind of tail, but the feet were free: the legs were joined to one another by their external borders, the tibiæ being rotated so that their posterior surface faced to the front and the fibulæ lying internal to them, so that the great toes were on the outside and the single os calcis lay anteriorly. With the exception of these three cases, the lower limbs were separate in all.

j. State of Muscular System.—Little notice was taken of the muscular system, but its development was occasionally referred to as good (Nos. 26, 30, 31, 32, and 38); in other cases it was stated to be defective, as in Nos. 21, 24, and 36.

(*To be continued.*)

VII.—THE DISORDERS OF SPEECH.

By John Wyllie, M.D., F.R.C.P. Ed., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh; Lecturer on Medicine in the Edinburgh School.

(*Continued from page* 205.)

Aphasia in relation to Organic Diseases of the Brain—*Continued.*

Motor Aphasia (Aphemia).

The form of Aphasia now to be considered has, by Wernicke, Charcot and others, been termed Motor Aphasia; but as it was originally described by Broca, and as Broca applied to it the term Aphemia, many writers have, in honour of Broca, wished to retain that term. It was formerly objected to the term Aphemia that the word, in ancient Greek, had a different and an objectionable meaning.[1] On this account, Trousseau proposed as a substitute for it the term Aphasia. But it has been found that this term, too, occurs in ancient Greek with a meaning different from its medical one.[2] The profession, disregarding these original meanings, has decided to retain both terms. Aphasia is now used as the generic title for the whole of this group of Speech Disorders, and Aphemia is used, by many, as the specific term for the motor variety of aphasia.

Before I go on to discuss in some detail the characteristics of aphemia, it may, I think, be of advantage to look for a moment at the work which is now being done by the Experimental Physiologists in connexion with the physiology of the motor speech-centre in the brain.

It will, of course, be borne in mind that monkeys, and the other animals experimented upon, are not endowed with human speech, and that, therefore, the centre in the brains of these animals which anatomically corresponds with the motor speech-centre of the human subject, does not fully correspond with it physiologically. Yet the correspondence is real and close, even physiologically; because, though they cannot speak articulately, these animals have an expressional language of their own, for the purposes of which they employ largely the same organs as are employed by man for articulate speech, viz., the organ of voice, and the muscles within and around the mouth. Therefore, in analysing the action of the motor centre in these animals, and in localising the various subcentres contained within it (such as that for adduction of the vocal cords, and those for movements of the lips and tongue), experimental physiology is fitted to throw much light upon the constitution of the motor centre in the human subject.

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[1] It meant infamy.

[2] It meant dumbness from fear or perplexity.

At page 478 of Dr Ferrier's work on *The Functions of the Brain*, 2nd ed., the reader will find, in the diagram showing the cortical centres in the human brain, that Dr Ferrier has indicated the motor centre for speech by a circle (9·10), within which he includes (1) the vertical part, or "foot," of the third frontal convolution; (2) the "foot" of the ascending frontal convolution; and (3) part of the "foot" of the ascending parietal. The area thus demarcated is that which is now termed "Broca's convolution." By Broca himself it was termed the "Operculum," because it covers like a lid, and hides from view the group of short convolutions on the floor of the Fissure of Sylvius known as the Island of Reil. It will be observed that this operculum corresponds, on the surface of the brain, to the angle between the short ascending and the long horizontal branch of the Fissure of Sylvius. Ferrier (p. 481) says:—"(9) and (10), included together in one, mark the centres for the movements of the lips and tongue as in articulation. This is the region disease of which, on the left side, causes aphasia, and is generally known as Broca's Convolution." In the diagram which I now insert, this area is indicated by shading.

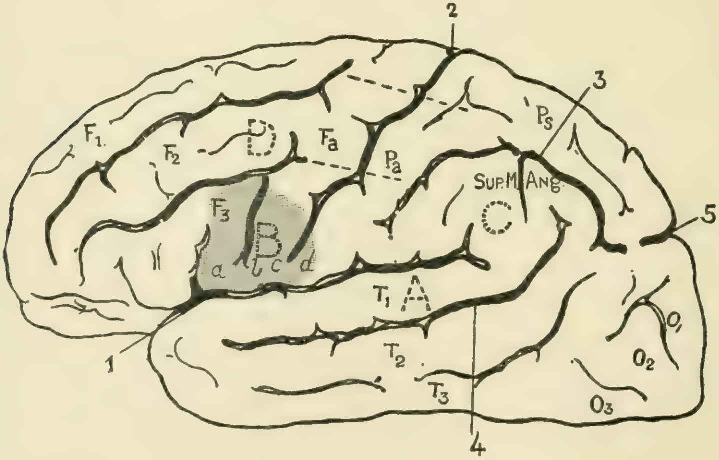

FIG. 6.

I do not know whether Ferrier, in thus demarcating the centres for the movement of the lips and tongue in the human subject, was guided entirely by the results of experimental observations on the lower animals, or also took into account the results of clinical and pathological observation upon the human subject. But I suppose he must have taken clinical and pathological observation into account, because I find that the later observations by V. Horsley and his colleagues have led to the demarcation of an area for the movements of the lips and tongue that is different from the area given by Ferrier. It is different in this important respect, that *it does not include within it the foot of the third frontal convolution.* It limits the representation of the movements of the lips and tongue to the foot of the ascending frontal and the foot of the ascending parietal convolutions, and leaves the foot of the third frontal convolution out of account altogether. Neither in the macacque monkey, nor in the orang outang (an anthropoid), have these later experimenters found the foot of the third left frontal convolution to be included within the motor area for the movements of the lips and tongue.[1] Now this is a remarkable fact, because, as we shall see by-and-by, clinical and pathological observation has shown that the foot of the third left frontal convolution has relations to the motor production of speech that are apparently even more important than those of the feet of the ascending frontal and ascending parietal convolutions.

How is this apparent discrepancy between the results of experimental and those of clinical observation to be explained? It seems to me that if the foot of the third frontal convolution is not motor in function, and yet has relations of extreme importance to the motor production of speech, we are almost forced to the conclusion that it must be, in a special manner, the storehouse of the guiding psycho-motor pictures or memories, which, in themselves, are so largely sensory in constitution, being made up chiefly from memories of muscular and tactile sensations. Are these psycho-motor pictures, then, stored in the foot of the third frontal convolution, and the executive motor cells contained in the feet of the ascending frontal and ascending parietal convolutions? We cannot as yet answer this question definitely. We must wait for the results of further experiments upon anthropoid monkeys; and, above all, we must wait for the decisive evidence that can be obtained only from the careful observation of cases in which limited lesions have destroyed one small portion or another of the grey matter within the area of Broca's convolution. Some such cases have already been recorded, and I shall give notes of a few of them; but we are greatly in need of additional evidence upon this point.

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[1] For an account of the experiments upon the brain of the orang outang, see V. Horsley and E. Beevor, in the *Phil. Trans. of the Roy. Society, (B.)* 1890, p. 129. For the application of the results of recent experimental researches upon animals to the human brain, see V. Horsley, in the *International Journal of Science*, vol. xciii. 1887, p. 342.

A very important conclusion arrived at by the experimental physiologists is that, within the area of Broca's convolution, there is a special sub-centre for the motor innervation of the muscles which adduct the vocal cords, and thus place them in position for phonation. This sub-centre is situated, in monkeys, within the foot of the ascending frontal convolution, close behind the precentral sulcus. We owe this advance in the physiology of the motor area to the observations of a number of physiologists, but more especially to those of Krause[1] and of F. Semon and V. Horsley.[2] In this sub-centre, the adductors of the vocal cords have been found to be bilaterally represented,[3] so that stimulation of this sub-centre in one hemisphere is found to be capable of producing equal adduction of both vocal cords. In the human subject, the probable situation of this sub-centre for phonation is indicated in Fig. 6 by the letter *b*, in the shaded area. The sub-centre for the oral articulative mechanism (lips, tongue, etc.) lies further back, in the ascending frontal convolution, at and about *c*, and seems also to extend backwards to the neighbourhood of *d*, in the ascending parietal convolution.[4] Here, then, at *b* in Fig. 6, we have denoted the probable centre for phonation (the vocal mechanism); and at *c* and *d* the centre for the movements of the lips, tongue, etc. (the oral articulative mechanism). Whether or not the foot of the third frontal convolution, at *a*, is really the storehouse of the guiding psycho-motor pictures for spoken speech, we must leave, for the present, an open question; but we may make note of the fact that, although in the lower animals electrical stimulation of this convolution *a* appears to be incapable of exciting muscular movements in the larynx or mouth, yet in the human subject a destructive lesion at *a* is even more disastrous to speech than such a lesion at *b*, *c*, or *d*.

Effects of Motor Aphasia upon the Production of Speech.

1. Spoken Speech.—Destruction of Broca's convolution (B in Fig. 6) renders the production of spoken speech impossible. This would be the law, without exception or modification, were it

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[1] Krause, *Archiv. für Anat. und Phys., Physiol. Abth.*, 1884.

[2] F. Semon and V. Horsley, *Trans. of the Roy. Society* (*B.*) 1890, p. 187.

[3] They have been found to be so in dogs, by Krause; and in monkeys, by F. Semon and V. Horsley. On the other hand, Masini (*Arch. ital. di Laryng. Napoli.*, April 1888) finds that very light stimulation of the centre in one hemisphere produces movement only of the opposite vocal cord, though stronger stimulation produces bilateral movement. Semon and Horsley, however, have repeated their experiments since the publication of Masini's paper, and they adhere to their conclusion that unilateral stimulation of the centre always produces equal movement of both vocal cords. See F. Semon's contribution to Virchow's *Festschrift*, 1890, vol. iii. p. 429.

[4] In the orang outang, this area seems not to extend so far back as to the ascending parietal convolution: it seems to be confined to the ascending frontal. See diagrams of the brain of the macacque monkey and the orang outang, in an article by V. Horsley, *Nineteenth Century*, June 1891.

not for the existence of the "uneducated centre of the opposite hemisphere." When the educated convolution is destroyed, thoughts seeking expression are thrown upon the very scanty resources of this uneducated convolution. We have already seen how much and how little this convolution can do in such circumstances. In some cases, it can do nothing at all, the patient being unable to emit any articulate sound whatever. In other cases, the uneducated centre may suffice for the emission of some recurring utterance, or, under excitement, some old familiar oath or other conventional expression. In other cases, again, the words *yes* and *no*, and perhaps a few others, may be emitted and used appropriately. We have already discussed these capabilities of the uneducated centre at some length. We have already also seen that, by a process of Further Education, the uneducated centre may, in young people especially, gradually acquire more and more efficiency, until at length it may be able to take the place, and discharge the functions, of the convolution that has been destroyed. In such cases, speech is gradually bettered, and its recovery may be complete.

In trying to illustrate the effects of motor aphasia upon the production of spoken speech, it would be scarcely possible to select more instructive examples than Broca's two original cases—the cases whose publication in 1861 did so much to arouse throughout Europe a great interest in the subject of aphasia. The patients were both inmates of the Bicêtre Hospital in Paris, to which Broca was surgeon.

CASE I. (Broca, *Mémoires d'anthropologie*, p. 17).—On the 11th of April 1861, there was admitted into the surgical wards of Bicêtre Asylum a man of 51 years of age, named Leborgne. He was affected with a diffuse gangrenous phlegmon of the whole of the right inferior extremity, and of this he died five days after coming under Broca's care. Leborgne had been an old inmate of the Bicêtre Asylum, having lived in it for a period of about twenty years. His history was that he had since youth been subject to epileptic fits. At the age of 30 he had lost his speech, and, becoming about this time unable to continue at his usual occupation as a lastmaker, he had been admitted into the Bicêtre Asylum. For the first ten years of his residence at the Bicêtre he was active and intelligent, though speechless. He was known in the Asylum by the nickname 'Tan,' because that was the only syllable he could pronounce. In answering questions, or in expressing himself spontaneously, he said merely *Tan, Tan, Tan.* He expressed himself well, however, by pantomime. When his interlocutors did not understand his pantomime, he got easily irritated, and added then to his vocabulary "one great oath, one only—'Sacré nom de Dieu.'" After the first ten years in the Bicêtre, his health began to fail. He began to lose the motor power in his right arm; and the paralysis gradually extended to the right leg. At the same time, sight and intelligence became alike enfeebled. For the last six or seven years of his life he had been constantly confined to bed. In this condition he was seized with the phlegmonous erysipelas for which he was transferred to the surgical ward and placed under the care of Broca. As already said, he died in about five days after his admission.

At the autopsy, a very extensive softening was found in the left hemisphere. It involved the greater part of the frontal lobe, as well as the corpus striatum, the Island of Reil, and the convolutions lying along the margin of the Sylvian fissure. On careful examination, Broca was able to satisfy himself that, in this vast area of softening, the oldest portion was that at about the middle of the frontal lobe. It appeared evident that in this neighbourhood the softening had first begun, and that it was when the softening was limited to this neighbourhood that the patient had been merely aphasic, and not paralysed. The subsequent hemiplegic paralysis had been caused by the backward extension of the softening. Such was Broca's explanation of the case, and the explanation received singular confirmation from Case II., which I now proceed to make a note of.

CASE II. (Broca, *Mémoires d'anthropologie*, p. 34).—The patient, named Lelong, admitted 24th October 1861, was 84 years of age. He had been a labourer. In April 1860, he had had an apoplectic stroke, with temporary loss of consciousness; for which he had been treated in hospital. He had recovered in a few days, without any hemiplegia, though his walk, without being lame, was a little uncertain. The stroke, however, had rendered him aphasic, so that his vocabulary was reduced to the few words to be presently noted. He was in this condition, able to go about, though aphasic, when, on the 27th of October 1861, six months after the stroke, he fell and broke the neck of his femur. It was for this injury that he was admitted to the Bicêtre Hospital under the care of Broca, and it was from the effects of this injury that he died ten days after admission.

Broca's notes about the speech of this patient are very interesting. He says:—"To the questions one addressed to him he replied only in signs, accompanied by one or two syllables articulated energetically and with a certain effort. These syllables had a meaning. They were French words, viz., *oui, non, tois* (for *trois*), and *toujours*. He had a fifth word which he pronounced when one asked his name. He then replied 'Lelo,' for Lelong, his real name.

"The three first words of his vocabulary corresponded each to a definite idea. In affirming or approving, he said '*oui*.' In expressing the opposite idea, he said '*non*.' The word *tois* expressed all numbers, all numerical ideas. And, lastly, whenever these three words were not applicable, Lelong helped himself with the word '*toujours*,' which, in consequence, had no definite meaning. I asked him if he knew how to write? '*Oui*.' If he could do it? '*Non*.' 'Try.' He tried, but he could not succeed in directing the pen."

Broca illustrates these points very fully, by giving details of his conversations with the patient. He tells us that the patient expressed himself well in pantomime, when words failed him. For example, when he was asked what had formerly been his occupation, he imitated very well the action of using a shovel.

At the autopsy, a cyst-like cavity filled with serum was found to occupy the room of what is now known as Broca's convolution. It extended far enough upwards to take the place also of the posterior extremity of the second frontal convolution. It was sharply limited and defined in its margin and base, and the hæmatin crystals in its wall showed that the cause of the local destruction of cerebral tissue had been the apoplexy in April 1860.

Even apart from their great historical interest, these two cases are most valuable: they illustrate so well and so fully the characteristic features of motor aphasia. Broca's convolution being in both cases utterly destroyed, there was, in both, the almost complete annihilation of the power of producing speech. In both cases, the patient was thrown upon the scanty resources of the uneducated convolution of the opposite side; and in both it is evident that a few crumbs of speech had been acquired by this convolution, through "overflow of education." Leborgne can swear "one great oath," when he is irritated. Lelong can articulate, and use intelligently, three or four words, including *yes* and *no*. Both patients also exhibit examples of recurring utterances. Leborgne, on all occasions, when he tries to speak, says *Tan, Tan*. Lelong, when the few words of his vocabulary are inapplicable, always uses the recurring utterance *toujours*. Both patients are capable of expressing themselves well in pantomime. Lastly, in both patients, though the production of speech is almost completely annihilated, its reception and interpretation are little, if at all, interfered with.

It would be exceedingly interesting if we could have before us a series of cases showing the effects of very limited lesions in the various parts of Broca's convolution,—lesions situated, for example, at the positions indicated by *a*, *b*, *c*, and *d*, in Fig. 6. But, from cases recorded, it is not yet possible to bring together such a series. Here are a few of the best cases of this kind that have as yet been published.

CASE III. (Rosenstein, *Berliner Klin. Wochenschrift*, 1868, p. 182). *Lesion in the Third Frontal Convolution, presumably in its "foot," at or about a*, Fig. 6.—A woman, aged 22, was admitted into hospital in 1867, suffering from fever of intermittent type, and also from nephritis and uraemia. In the course of her illness, which lasted many months, she had severe headache, vomiting, and convulsions. But she had recovered from these symptoms, and the dropsy and uræmia were also disappearing, when one day she suddenly developed cerebral symptoms of a serious kind. She sat up in bed with dilated pupils and staring eyes. She could understand clearly what was said to her, but, in reply to questions, could only say *yes, yes.* She tried to make her wishes known by gesture. In order to see if she had also lost the power of expressing herself in writing, she was got to make an attempt to write; but, though formerly she had been able to write well, she was now only able to make different kinds of strokes,—no letters. If one of her wishes was guessed, she nodded. She died, a fortnight after the attack, from dropsy in the chest; having remained speechless, though intelligent, till the date of her death. There had been no paralysis. At the autopsy, there was found a clot of the size of a hazel-nut, surrounded by a limited area of secondary softening, in the third frontal convolution. It is to be regretted that its precise situation in the convolution is not given.

Let it be noted that in the foregoing case there was loss of the power of writing. I now proceed to make a note of another case of limited lesion in the same locality in which the power of writing was retained.

CASE IV. (Dr Wm. Ogle, *St George's Hospital Reports*, vol. ii. p. 105). *Softening of the foot of the Third Frontal Convolution, a,* Fig. 6.—A man of rheumatic constitution, and the subject of aortic and mitral disease. Three days before admission he had fallen down suddenly, without loss of consciousness, and had found himself hemiplegic and aphasic. On examination, his speech was found to be limited to the two words *yes* and *no.* At first, he had difficulty in deglutition and in putting out his tongue, but these symptoms passed away in a few days. He understood all that was said to him, and expressed himself well by pantomime. "He could write with his left hand, with sufficient distinctness, words which he could not pronounce when asked to do so. In his writing, there was often a tendency tc reduplication of letters. For instance, he wrote 'Testatament' for 'Testament.' But I cannot say whether this was more than the result of defective education."

The autopsy showed the brain to be healthy, except at two limited spots, of which the chief "was the posterior part of the third frontal convolution on the left side. Here was a softened and almost diffluent patch, about three-quarters of an inch in breadth, reaching from the highest part of the third convolution, backwards and downwards to the Fissure of Sylvius. The softened part was not actually the most posterior part of the convolution, for there was a narrow unsoftened strip between it and the transverse (ascending) frontal convolution. On cutting into the brain, a second small patch of softening was seen in the centre of the left hemisphere, external to and rather above the corpus striatum, and extending towards the posterior extremity of the Fissure of Sylvius. All the rest of the brain was apparently healthy." The cause of the softening in Broca's convolution was found to be occlusion, by embolism, of a branch of the Sylvian artery.

This, I think, is one of the most valuable cases of the kind on record. I have already drawn attention to the fact that in this case the patient retained the power of writing.

A very interesting case of limited lesion at the bottom of the precentral sulcus (between *a* and *b*, Fig. 6) has recently been put upon record by MM. Balet and Boix, in the *Archiv. de Neurologie*, 1892, p. 231. For purposes of illustration, however, the case is unfortunately not a good one, since, along with the limited lesion in the left hemisphere, there was very extensive disease in the right hemisphere. I therefore merely refer to the case in passing, without quoting it.

It is much to be regretted that we have not as yet records of cases of limited lesion at *b*, *c*, and *d* (Fig. 6), respectively. If we may accept the conclusions of the experimental physiologists, the area at *b* represents the centre for the adduction of the vocal cords in phonation, and, behind this, the area at *c* and *d* represents the centre for the oral articulative mechanism (lips, tongue, etc.). In the second paper of this series, I have shown that the complete disablement either of the vocal mechanism or of the oral articulative mechanism renders an individual quite speechless. Does it follow that destruction of the phonating centre at *b* would have this effect, and that this effect would also be produced by destruction of the centres for oral articulation at *c* and *d?* It would follow, I think, undoubtedly, were it not for one possibility. If we are to suppose that the foot of the third frontal convolution, *a*, is the centre for the guiding psycho-motor images, and that at *b* and at *c* and *d* lie the motor executive centres of the vocal and oral articulative mechanisms, it is conceivable that even after destruction of *b*, or of *c* and *d*, the psycho-motor pictures at *a* may be capable of having themselves orally exteriorized or executed by establishing new connexions, or rather by availing themselves of connexions previously not much used, with the executive centres of the opposite hemisphere.

But it is not of much advantage to speculate about these possibilities,—we have at present so little real knowledge of the functions that are subserved by each individual part within the area of Broca's convolutions. I have touched upon the subject merely to show how desirable it is that we should have careful records of the effects of limited lesions in this area.

I may here add that though I have not met with any good records of cases of limited lesions at *b*, or at *c* or *d*, I have, in looking for such, found two good cases recorded by Dejerine (*Comptes Rendus des Séances de la Société de Biologie*, March 1891), in which a small area of softening existed internal to *b*, not in the grey matter, but in the white matter subjacent to it. Both patients were the subjects of motor aphasia, but could express themselves freely in writing. The curious and puzzling circumstance about these cases is that there was, in both, paralysis (complete in one and incomplete in the other) of the right vocal cord. This, of course, is not at all in harmony with the results obtained by the experimental physiologists. According to these results, the vocal cords are represented bilaterally in the brain, so that stimulation of the phonating centre on one side of the brain causes adduction of both vocal cords, and destruction of the centre on one side does not cause any paralysis of the vocal cords, either on one side or on both. Though Dejerine says that the bulb was, in each case, carefully examined, and that no lesion was found in it capable of accounting for the paralysis of the right vocal cord, one is inclined to think that there must have been some lesion low down in the motor tract; because destruction of the whole of Broca's convolution is of common occurrence and has not been observed to produce paralysis of the opposite vocal cord,—the patient retaining his voice in such cases, though he has lost his speech.[1]

Recognising that it is at present premature to attempt any very precise analysis of the functions of the different areas in the grey matter of Broca's convolution—although experimental physiology is already affording grounds for the belief that such an analysis will be possible at no distant date,—let us return to the consideration of the characteristic features of motor aphasia, as exhibited in the production of spoken speech.

Ataxia (*Asynergia*) *Verbalis in Motor Aphasia.*—The leading feature of motor aphasia, when it is well marked, is that the production of words is rendered impossible, except, it may be, in the case of the words that are retained, such as the recurring utterances, a few words in very common use, such as *yes* and *no*, and emotional utterances, such as oaths. The patient may possibly be able to call up other words in his mind, by revival of their auditory images, but, if so, he cannot utter them. He cannot utter words, even if they are spoken to him and he is asked to repeat them. To this disablement of the power of producing or uttering words, the term Ataxia Verbalis has been applied; and motor aphasia is accordingly often termed Ataxic Aphasia. It cannot be said that the term is a happy one, seeing that, literally, ataxia means want of order, and that, in motor aphasia, the leading feature is not disorder, but is disablement. I think it a pity that the term Asynergia Verbalis, originally proposed by Lordat in 1843, has not been retained, since asynergia (want of the power of working together) would have been a more appropriate term for this disablement of the complex motor mechanisms of speech than ataxia; and the term Asynergic Aphasia would have been more descriptive of the condition than the term ataxic aphasia. Theoretically, it seems reasonable to believe that asynergia verbalis may be due either, on the one hand, to the obliteration of those psycho-motor images which, in the production of words, are essential for the guidance of the executive motor cells; or, on the other hand,—the psycho-motor images being intact,—to the destruction of the executive motor cells. Further, it should be noted that a disablement of utterance of like character, and as complete as in either of these two cases, will result if the conducting fibres leading from the executive cells are cut across by a sub-cortical lesion.

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[1] There are upon record a number of other cases in which paralysis of one vocal cord was attributed to an organic lesion in the opposite hemisphere of the brain, the most important being (1) a case reported by Garel (*Annales des maladies de l'oreille et du larynx*, May 1886), in which a paralysis of the left vocal cord was attributed to softening of the foot of the right Ascending Frontal convolution, and (2) a case by Garel and Dor (*Ibid.*, April 1890), in which a paralysis of one cord was attributed to a small lesion in the Internal Capsule of the opposite hemisphere. Both cases will be found given fully in the Thesis by R. Mongorgé, entitled *Etude sur les Laryngoplégies Unilatéral*, Lyon, 1890. They are criticised by Semon (*Op. cit.*, p. 432), who holds that some lesion lower down in the motor tract must have been overlooked, and points to the fact that, in the experience of every physician, lesion in the foot of the Ascending Frontal, or in the Internal Capsule, does not produce the loss of voice which would result from paralysis of one vocal cord.

Destruction of the psycho-motor images or memories might, no doubt, be classed as a form of Amnesia Verbalis, if we chose to employ that term in its widest sense, as many have employed it. But, as I have already indicated in the last paper, it is extremely desirable that the term amnesia verbalis should be used in a more restricted sense, as the term for one of the most important of the symptoms of aphasia, viz., that Forgetfulness of Words which betrays itself in the loss of the power of calling up words in the mind, when they are wanted for purposes of utterance or of silent thought. We have no other term by which we can designate this most important symptom. Using the term in this sense, let us now look at the relation of amnesia verbalis to motor aphasia.

Amnesia Verbalis in Motor Aphasia.—We have already seen how prominent a symptom Amnesia Verbalis is in Auditory Aphasia; and how, in that condition, it is associated with its companion symptoms, Articulative Amnesia and Paraphasia. In Motor Aphasia, the absence of word-deafness, and the consequent ease with which the patient interprets what is said to him, has led many to think that there can be little or no amnesia verbalis. But this is a mistake. When thought is seeking expression, it leans towards the motor images; and, if these are destroyed, it cannot easily find the words it wants. Possibly it may with difficulty find some of them, by reviving the auditory images; in which case Amnesia Verbalis will not be complete. But there is reason to believe that in every case of severe motor aphasia that is due to destruction of the motor images, Amnesia Verbalis is extremely well marked,—even more so, perhaps, than it is in cases of severe auditory aphasia. Trousseau is evidently right when (p. 721) he says, "There is not only asynergia, there is amnesia verbalis. The patients have forgotten the words." He is also evidently right when he attributes to this amnesia verbalis the striking disablement of the power of expressing thought *in writing* that is exhibited by most of these patients.

When motor aphasia is severe, it is often very difficult to prove that the patient has severe amnesia verbalis, because it is difficult to get behind the obvious and prominent asynergia verbalis. In such cases, the retention of the power of expressing thought in writing would prove the absence of amnesia, in proportion as that power is retained. But the absence of the power of expressing thought in writing does not necessarily prove the presence of amnesia verbalis, because the power of writing may be destroyed by lesion in the visual or motor centres for writing. Therefore, in such cases, one is obliged to have recourse to Lichtheim's plan of trying to ascertain whether the patient can call up words in his mind. He asks the patient to indicate with his fingers the number of syllables in the names of familiar objects shown to him.

It is, as a rule, only when a patient is recovering from his motor asynergia that the amnesia verbalis can be easily demonstrated. He is then regaining the power of uttering the more common words and phrases, but, in accordance with laws which we have already discussed, he finds himself at a loss when he wishes to use a word of less common occurrence, such as the name of a concrete thing. Here is a case which beautifully illustrates this Amnesia of Nouns, in motor aphasia, which persists even when the patient is in process of recovery.

CASE VI. (*Reported by* Dr J. Batty Tuke *and* Dr John Fraser, *Journal of Mental Science*, 1872, p. 46.) *Shows Amnesia Verbalis. Also illustrates Recovery of Speech after Destruction of Broca's Convolution.*—A female, aged 54, admitted to the Fife and Kinross Lunatic Asylum on December 14th, 1868. Eleven years previously, at the age of 43, she had had an apoplectic seizure. On recovery of consciousness, she had not exhibited any paralysis, but had been found to be quite speechless. Had been weak-minded as well as aphasic from the day of the attack, but, after some years, had gradually regained her speech to a considerable extent. Had become actually insane only four weeks before admission. After her admission, she rapidly improved in mind, and became almost sane.

"During the whole period of her residence, two peculiarities in her speech were observed—a thickness of articulation resembling that of general paralysis, and a hesitancy when about to name anything, the latter increasing very much some months previous to her death." She forgot nouns in a striking way. For example, "she would say, 'Give me a glass of——.' If asked if it was water, she said 'No.' Wine? 'No.' Whisky? 'Yes, whisky.' *Never did she hesitate to articulate the word when she heard it.*" She could read, but was never observed to write. She died from caries of the vertebræ. The autopsy showed that the old apoplectic extravasation that had occurred eleven years before her death had resulted in the complete destruction of the posterior part of the left third frontal convolution, the posterior part of the second left frontal, the foot of the ascending frontal, and part of the foot of the ascending parietal. An admirable plate shows the limits of the lesion.[1]

This is a most valuable case, showing not only the complete, or almost complete, loss of speech that is produced in the first instance by such a lesion, but showing also the recovery of speech by education of the convolution of the opposite side; and showing, further, some of the peculiarities that are presented by such patients when they are in process of recovery. A forgetfulness of nouns (true amnesia verbalis) and a thickness of articulation resembling that of general paralysis of the insane are the two peculiarities noted. As in such cases of advancing recovery of speech we find amnesia of nouns to be so marked a symptom, we may reasonably conclude that amnesia verbalis exists from the beginning in motor aphasia. It probably exists in a proportion commensurate with the severity of the aphasia. The fact that both in auditory and in motor aphasia the patient may be unable to call up certain words, and especially nouns, in his mind, when he wants them for utterance or for silent thought, proves, I think, conclusively that in order to be called up from within with perfect ease the word-percepts must be complete: they must be possessed of both their auditory and their motor images, and these must be revived simultaneously. The loss of either image renders the percept incomplete, and makes its revival comparatively difficult. Hence the amnesia verbalis of both auditory and motor aphasia.

The Paraphasia which is so characteristic a symptom of auditory aphasia is rarely exhibited in cases of motor aphasia. If exhibited at all, it is only in a very slight degree; and, as there is no word-deafness, the patient is at once aware of any error he may make in the use of a word.

As amnesia verbalis is so marked a feature in motor aphasia, we may suppose that the imperfect development of the symptom which we have termed Articulative Amnesia may be experienced by the patient in relation to certain words. The auditory image of the word may be imperfectly revived, so that the patient has mentally an imperfect image of it. If so, he will not be able to articulate the word correctly. But it will be seen that, in motor aphasia, it would be practically impossible to know whether the patient's imperfect articulation of the word was due to the imperfect revival of it in his mind, or to the impossibility, owing to the motor asynergia, of articulating it when it is revived. Practically, therefore, it is impossible to distinguish between this Articulative Amnesia and slight Asynergia (Ataxia) Verbalis, though theoretically it is possible to make a distinction between the two.

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[1] At the date of the publication of this paper, the possibility of "further education" in the convolution of the opposite side was not generally recognised; and the authors of the paper naturally supposed that the case afforded evidence adverse to Broca's views. At the present time, the possibility of such further education is, of course, recognised by every one.

Lalling and other Faults of Speech in Motor Aphasia.—When, in recovery from motor aphasia, the uneducated centre of the opposite side is learning to discharge the function of the centre that has been destroyed, the articulation of the patient often exhibits faults which put one in mind of the lalling articulation of children. One of my patients lalled distinctly,—always, for example, using *T*, an easy letter, for a number of others. He said *tage* for *cage, take* for *sake.* He also used *L* for *W*, saying *lee* for *we;* and he scamped his words like a child, saying *'rison* for *prison.* His case was one of well-marked motor aphasia with right hemiplegia. His intelligence was fairly good. Slurring, also, is often met with in these cases of advancing recovery from motor aphasia; and a slight degree of Stuttering is met with occasionally. All these faults in the performance of the previously uneducated centre put one in mind of the imperfect performances of a child who is beginning to speak. The analogy occurred to Trousseau. He says,—"I have asked myself whether it is not simply forgetfulness of the instinctive and harmonious movements that we have all learnt from early childhood and that constitute articulative speech; and whether by this forgetfulness the aphasic patient is not put into the condition of a child whom one teaches to lisp his first words, or of a deaf-mute who, cured suddenly of his deafness, tries to imitate the language of the people whom he now for the first time hears speak. There would, however, be this difference between the aphasic and the deaf-mute, that the one has forgotten what he had learnt, and that the other has never learnt it."

(*To be continued.*)

Part Second.

REVIEWS.

Evolution and Man's Place in Nature. By HENRY CALDERWOOD, LL.D., F.R.S.E. London: Macmillan & Co.: 1893.

WE have read Prof. Calderwood's book with extreme interest. It is written in a most attractive style, and is very lucid. The author has been evidently at extreme pains to recognise the standpoint of evolution at every turn, and he undoubtedly appreciates the evolutionist theory to the full. He holds that the history of biology began "in primordial forms of the lowest order; it closes in the marvellous elaboration of the human organism, the most wonderful combination of physical structure and function which Nature contains. . . . . The rational life of man stands out to view on an eminence completely severed from this scheme of organic evolution. As an animal life—a type of physical existence—human life is fitted into the system of organic life on the earth. As a rational life—a type of spiritual existence—human life is exalted above all life besides, severed from companionship of animals. Man is a member of an intelligent order, possessing kinship with all rational beings, wherever such may dwell, who together constitute the spiritual kingdom within creation. As the result of the investigations now closed, these two orders of being,—the one organic, the other spiritual,—appear in vivid contrast; the striking fact is that man belongs to both. He has his place in a physical system, within which all is subject to decay and death; he has his place in a spiritual system, within which is no trace of death, but promise of continuity beyond the present state where there will be a continuity of spiritual existence."

"Of Nature, as interpreted by science, there is no key other than is found in a recognition of an Imminent and Intelligent Cause, in the midst of all, and concerned with all, that belongs to the history of being. This is the first Cause—the Eternal Personality—related to the spiritual life of rational souls, as He can be related to no other type of existence within the wide sphere of creation."

These two quotations may serve briefly to show the conclusion to which our author arrives, and if he has nothing strikingly new to support his arguments, he yet gives evidence of profound research, an unbiassed mind, and an earnest endeavour to treat this important matter in a comprehensive manner. Probably the best two chapters are those on Animal and Rational Intelligence and Rational Life. We recognise in him the rare and excellent combination of intellect and intuition.

The New Priesthood. By OUIDA. London: E. W. Allen: 1893.

THIS pamphlet is a very powerful and eloquent appeal against vivisection. Ouida's pictures of "society" are well known, and therefore the accuracy of her description of the new priesthood may be gauged. At the same time, it may be well to see ourselves as others see us, although we hope there are few who really look through Ouida's spectacles. It is strange and somewhat sad that such a satire should be published.

One or two quotations will show the character of the book. "I want to impress on the great mass of the public that there are tens of thousands of persons who pursue the scientific torture of animals as a career, as a trade, as a means of livelihood, and that these men would torture human victims with the self-same brutal callousness and celerity as they now display in the mutilation and torture of animals. The boast of the Japanese cooks is that they can cut every atom of flesh off a living fish bit by bit, slowly and lovingly, without causing death ; the vivisector aims at attaining the same artistic perfection, and has indeed so far attained it that he can put an animal to the most agonizing suffering throughout a sequence of many months without permitting it to take refuge in the last mercy of death. Long practice enables a European scientist, like the cooks of Niphon, to cause the extremity of torture without allowing the insensibility of dissolution to end his victim's pang. Even in mere demonstration, or that daily practice which is considered necessary to teach manual dexterity to a physiological pupil and to the students of the medical and veterinary schools, the utmost limits of the agony which can be borne by life are reached and proven over and over again : 'sixty-four operations being performed on the same horse,—the eyes cut out, the ears cut off, the tail docked, the teeth punched out, the belly opened, the hoofs torn off, and every inch of the body fired ;' and at Alfort and other veterinary schools one horse or one bullock is thus killed by slow degrees every day." What will the advocates of lady doctors say to the following sentence ?—"Woman also, who when once she is cruel is tenfold more cruel than man, and when she is pitiless is a hundredfold more pitiless than he, is now in the laboratory causing and watching the agonies of tortured animals with all the thirst and avidity of a neophyte for the unknown. As the inquisitor had his female witch searcher, who drove in the pins into the breasts of his accused sorceress, so the male physiologist has his female pupil, who may be trusted to outrun his teachings in ingenious cruelty and patient torture, even as the female prover of witchcraft outran the instructions of priest or of judge." One more quotation and we have done. "Besides these, he has also his human subjects,—the poor victim of the hospital, helpless as the dog, tied down to the torture trough, unable to resist, ignorant of what is done, offered as a spectacle or as a subject to the students, lying prone and motionless on his bed of pain, angrily silenced if he dare protest, experimented on against his will or without his knowledge, mere 'material' as he is, to be studied, pulled about, probed, tormented, lacerated until he can bear no more, and faints and dies, and is carted away as a useless mass of mutilated tissue like the used-up dog, flung out of a hospital laboratory with excoriated nerves and open breast."

Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Compiled from Official Sources. Tenth Annual Issue. London : Charles Griffin & Co. : 1893.

We can only repeat what we said about this publication last year at this time. It is well drawn up, compiled with great accuracy, and indispensable to any one who may wish to keep himself abreast of the scientific work of the day. We only wish, however, that an index to subjects could have been included, as the name of a society is not always a key to the matter discussed, and reference to which is desired. It would hardly be possible, however. At any rate, the volume in its present form gives us a very clear indication of the direction in which the progress of science is tending.

A Manual of Bacteriology for Practitioners and Students, with especial reference to Practical Methods. By Dr S. L. SCHENK, Professor Extraordinary in the University of Vienna. Translated from the German (with the Author's permission), with an Appendix, by W. R. DAWSON, B.A., M.D., Univ. Dub. With 100 Illustrations, partly coloured. London: Longmans, Green, & Co.: 1893.

To write a book on Practical Bacteriology that shall suit every one is an impossibility. The essential elements which the beginner at the subject must learn are wearisome to him who has already made some progress in the science, and the tendency of many authors is to go too rapidly ahead, and by ignoring the elements make the whole subject Greek to the beginner.

This book strikes a fair medium between these extremes, and it would almost be possible for one quite ignorant of the subject to attain a fair knowledge by working on the lines indicated by the author.

The chapter on the Preparation of Media is good and very full; indeed, on the subject of plover's egg albumen, a medium introduced by the author, it is very full.

One omission only we note,—*i.e.*, Hueppe's very valuable plan of sterilizing blood serum after coagulation, a much more satisfactory method than the one generally in use. The chapter on Staining Methods is not definite enough for a beginner. A distinct receipt for the manufacture of each stain should be given, and the method of "fixing" the film could be clearer. It is surely a misprint which advises a 5 per cent. solution of sulphuric acid as the alternative to a 33 per cent. one of nitric acid in examining for the tubercle bacillus.

The section on imbedding is good, though one misses all reference to the methods of fixing the sections on the slides, and so retaining all fragments,—one of the great advantages of the paraffin method.

There is an excellent description of the organisms most frequently met with in laboratory work, and a useful chapter on the methods of examining articles of diet for organisms. Another useful chapter is on the bacteriological examination of the organs and cavities of the body. For those with special knowledge of any special organ it would be possible to find fault, but taken as a whole the chapter is excellent and exceedingly well up to date. An Appendix by the translator deals with cholera vaccine, the "parasites" of cancer, and the action of light on micro-organisms, this last being an exceedingly interesting contribution.

The book is fully illustrated; and no doubt a time will come when it will no longer be necessary to supply pictures of incubators, test-tubes, and steam sterilizers.

The translator's work is excellently done, and is in marked contrast to the very frequent slavish adherence to German construction which, transformed into English, is most irritating to the reader.

To those who wish to obtain a practical knowledge of bacteriology the book may be recommended.

The Diseases of Inebriety from Alcohol, Opium, and other Narcotic Drugs; its Etiology, Pathology, Treatment, and Medico-Legal Relations. Arranged and Compiled by the American Association for the Study and Cure of Inebriety. Bristol: J. Wright & Co.: 1893.

THIS volume is intended as an antidote to the most confusing uncertainty and conflicting opinion which exists concerning the scientific study of inebriety and its maladies, and its object is well fulfilled. It is published by the American Association for the Study and Cure of Inebriety, of which T. D. Crowthers is the secretary, and it represents the work of this Association, and the character of the papers and discussions which have appeared in its journal.

We have carefully gone through the book, and can endorse most of its conclusions. The sections dealing with the abuse of ether, cocaine, coffee and tea, eau-de-Cologne, and extracts of ginger are specially worthy of attention. The sale of ginger in Maine is so great that it has been declared by the Courts to be an intoxicant, and placed among the alcoholic drinks prohibited. The increased consumption of eau-de-Cologne, both in the large cities of Europe and in America, indicates that it is becoming a drink in many circles in preference to other forms of spirits. The arguments for legislation brought forward in this volume are extremely cogent.

On Chorea or St Vitus's Dance in Children. By OCTAVIUS STURGES, M.D., F.R.C.P. Second Edition. London: Bale & Sons: 1893.

THIS is an admirable monograph upon an interesting subject. It has been well revised throughout, and the sections devoted to symptoms and diagnosis have been amplified.

The author has modified somewhat his earlier views as to the rheumatic connexion of chorea. The question, in fact, comes to this,—Does rheumatism actually confer this extra liability to suffer from chorea at some future period, or is it that the excess of rheumatism is only apparent, and due to the fact that chorea shares with rheumatism both heart disturbance and limb pain, so that symptoms which properly belong to the one affection are easily attributed to the other? If the first supposition be adopted, it will be necessary to insist (for here the evidence of statistics is decisive), first, that the rheumatism which predisposes to chorea is seldom connected with it in point of time, a clear interval occurring between the disappearance of the cause and the arrival of the effect; and, secondly, that the rheumatic children who become choreic often need the very same immediate incentive to the disorder as do other children,—viz., alarm, mental excitement, or nervous shock. If the second supposition be adopted, the prevalent belief in the connexion of rheumatism and chorea depends upon faulty observation, which is sufficiently explained by the circumstances of the two disorders. In the lessened proportion of rheumatism in our later statistics we see the operation of that still recent knowledge which discriminates between the heart affection of chorea and that of rheumatism; while, with the special liability of choreic children to joint and limb pain, we may well accept a certain proportion of them credited with rheumatism without becoming convinced of any real connexion. . . . . The fact that a child suffering from chorea has at some earlier period suffered from rheumatism proves nothing except that one disease does not shut out the other, but a single example of the two affections in close union argues strongly in favour of a common pathogenesis, and such is habitually the nature of the relationship in these young children.

With regard to treatment, the author strongly urges it to consist in "sufferance, patience, cheerful anticipation, a firm, unshaken purpose, self-reliance,—the very same virtues we seek to arouse in the patients. . . . . Violent remedies—remedies themselves dangerous to life—are ill suited to a disease that of itself, however violent, habitually recovers."

We agree with the author, and can warmly commend the book.

Recent Developments in Massage: Historical, Physiological, Medical, and Surgical. By DOUGLAS GRAHAM, M.D. Second Edition. Detroit, Mich.: George S. Davis: 1893.

THIS small book is a supplement to the author's text-book on Massage. It will be useful to those specially interested in the subject, for it contains many practical hints. The most useful parts, perhaps, are those treating of massage in diabetes, chronic diarrhœa, and indigestion.

Methods of Precision in the Investigation of Disorders of Digestion. By J. H. KELLOGG, M.D., Superintendent of the Sanitarium at Battle Creek, Michigan, etc. Michigan: Modern Medicine Publishing Co.: 1893.

THE method of precision used by Dr Kellogg is that given to the world by MM. Hayem and Winter, now more than two years ago. The publication of this method, like that of all striking novelties, has raised a very considerable controversy,—a fact, we are bound to say, that our author seems to have little cognisance of. In Germany, for instance, several observers have come to the conclusion that the essential part of the process, the evaporation of the stomach contents at 100° Cent., is liable to error. Others, however, with apparently as good opportunities of judging, commend the process for accuracy, though admitting its cumbrous nature. Dr Kellogg has analyzed 413 specimens from 321 cases. Like Hayem and Winter, he reduces all the cases to algebraical formulæ, and he groups and treats them according as the results are above or below the normal figures already determined from the examination of healthy stomachs. He retains the formula $\frac{A - H}{C} = a$, where A is the total acidity, H the free chlorine, and C the chlorine combined to proteids. Normally a should $=1$, but the presence of acid phosphates diminishes the value of A and brings a down to ·86. We have not space to describe the very full classification he adopts of the chemical disturbances of digestion. He unfortunately has mixed up Greek, French, and English terms in the most confused manner. The whole forms an honest piece of work, which will be valuable, even if the results do not altogether stand the test of time, as a careful and painstaking contribution to the vexed question of the chemistry of digestion. Dr Kellogg himself admits that the method is not one to be used without the help of a laboratory.

The Asclepiad. Second Quarter, 1893. By SIR BENJAMIN WARD RICHARDSON, M.D., F.R.S. London: Longmans, Green, & Co.

THIS is a more than usually brilliant number of this exceptionally valuable and instructive magazine of original research and observation. Conspicuous for its excellence, both in matter and manner, is an article on the Lancet as an Instrument of Precision in Medical Practice, full of practical wisdom spiced with much humour. An Essay on the Healthy Culture of the Literary Life should be perused by every brother of the quill, and the Life of John Locke is one of the most interesting biographical sketches of the series. The profession all over the English-speaking world will rejoice in the recognition of the labours of Sir Benjamin Ward Richardson, and of the right of the profession to social distinction, in the knighthood so gracefully bestowed on him by the Queen.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXII.—MEETING X.

Wednesday, 5th July 1893.—Mr JOSEPH BELL, *President, in the Chair.*

I. ELECTION OF MEMBERS.

The following gentlemen were elected Ordinary Members of the Society:—A. B. Giles, M.B., C.M., 1 Kew Terrace; Thomas Lawson, M.B., C.M., 16 Dean Terrace; W. Basil Orr, M.B., 13 Braid Road, South Morningside; James A. Clark, M.B., C.M., 4 Cambridge Street; F. W. Foxcroft, M.B., C.M., 31 Forrest Road, Wilmslow, Cheshire; Philip G. Borrowman, M.B., Elie, Fife.

II. EXHIBITION OF PATIENTS.

1. *Mr Alexis Thomson* showed a case of EXTRA-PERITONEAL RUPTURE OF THE BLADDER.

2. *Dr Andrew Smart* showed—(*a.*) A case of HYSTERICAL PARAPLEGIA in a girl aged 13; (*b.*) Two cases of SPASTIC DISEASE.

III. ORIGINAL COMMUNICATIONS.

1. *Dr Andrew Smart* read a paper on THE TREATMENT OF ANÆMIA AND CHLOROSIS BY THE CHIEF IRON PREPARATIONS COMMONLY IN USE. The following are some of the general conclusions arrived at by the author:—

(1.) *Sulphate of Iron.*—Of the varieties of iron used in the trials recorded, the best results have been obtained from the sulphate. This accords with previous experience. It is the preparation which undoubtedly possesses the greatest therapeutical activity, and the one which in the different varieties of the disease and constitutional differences of the anæmic patients may most uniformly be depended upon for satisfactory results. In anæmic patients who suffer markedly, as many of them do, from atonic dyspepsia, and in whom consequently the hydrochloric acid is either greatly deficient or absent, it is of great advantage to their recovery to prescribe 15 to 25 minims of dilute hydrochloric acid shortly before meals, the iron salt being taken shortly after meals. But, on the contrary, to those patients whose stomach complaints are of an opposite nature, being due to excess of acid (pyrosis), acid in any form cannot be given; the substitution of 10 grains each of bicarbonate of soda and carbonate of potash before meals will be of material assistance to the stomach by inducing tolerance of the iron, and thereby expediting recovery. In assigning the first place to the iron sulphate as a remedy, I am guided by the whole of the circumstances connected with each case in which trial was made. As a remedy it is exceptionally active in restoring the deficient corpuscles alike in their number and character, and also is notably active in restoring hæmoglobin in chlorosis.

(2.) *Saccharated Carbonate of Iron.*—Numerous trials with this preparation were uniformly of a favourable character in the different types and stages of the disease in which it was given. It is invariably well tolerated, whatever be the nature of the dyspepsia from which the patient suffers. It is given in doses varying from 20 to 30 grains thrice daily, with, or immediately after, meals. On these grounds I consider it entitled to rank as second best therapeutic iron.

(3.) *Protochloride of Iron.*—This preparation was given, in the form of the syrup, in 1 drachm doses thrice daily after meals. Each drachm of the syrup contained 7 grains of the protochloride. As, during its administration, it repeatedly brought on nausea, and had consequently to be suspended for a time, it would be better to avoid this drawback by giving it at the commencement in smaller doses, increasing it gradually to the 1 drachm dose as mentioned above. Making allowance for the delay caused in this way by the suspension of the remedy, and its liability to induce intolerance, it is entitled to hold at least a third place in the grade of efficacy of these remedies. Recovery under its administration is otherwise in every respect satisfactory and complete.

(4.) *Phosphate of Iron* yielded excellent results only in some of the patients treated by it; but in others it apparently failed, its effects being only appreciable after considerably protracted treatment. The beneficial character was apparent in those types of the disease in which there existed constitutional conditions allied to neuroses.

(5.) *Iron Peroxide.*—This iron in some cases yielded only negative results, but in other cases its effects were satisfactory. This difference in its effects may depend upon individual peculiarities of constitution. It cannot, therefore, as a remedy be relied upon in all cases.

(6.) *Peptonate of Iron and Manganese.*—This makes rather a pleasant mixture, and is not accompanied by any disagreeable stomach troubles if given in small doses to start with. I gave a drachm, and gradually increased the dose to two. The results as regards the corpuscles were good; but it was not until adding the sulphate that the hæmoglobin advanced to a proportionate extent. Consequently, by itself it is not equal in value to several of the other salts of iron mentioned above.

(7.) *Bipalatinoids.*—A combination of iron sulphate and potass. carbonate. This combination was tried in several cases with more or less success. At first three bipalatinoids were given thrice daily, but the results were very slight. The dose was increased, and six and afterwards nine were given thrice daily. It is an undoubtedly elegant preparation, and patients take them without difficulty; but beneficial results are too long delayed to be be satisfactory and to render the treatment by them generally useful.

(8.) *Arsenic.*—This remedy when combined with iron is evidently useful as an alterative; but, as the results of the trials made with it as the sole remedy showed, it did not appear to exert any direct or appreciable effect on the renewal of the red blood-corpuscles and hæmoglobin in the cases of symptomatic anæmia and chlorosis in which it was tried. When, however, combined with an iron salt, especially the sulphate, I could not avoid being convinced that the efficacy of the iron was enhanced by the combination.

(9.) In pernicious anæmia, however, arsenic exerts a distinctly noticeable effect in promoting recovery, alike of red blood-corpuscles and hæmoglobin. Although iron was long and freely exhibited in several cases, no evident effects of a constructive kind were produced upon the corpuscles and hæmoglobin until arsenic was added to the treatment; and not even then until full doses (20 to 30 minims daily) had been continued for some time. It is, however, rare, and indeed exceptional, in pernicious anæmia, to be able to administer arsenic in almost any dose except the smallest,—that is, only a few minims daily,—on account of the extreme intolerance of it, so that in the majority of cases it is practically out of account as a remedy.

Dr A. Lockhart Gillespie said Dr Smart had put a question to him, as to whether or not sulphate of iron was acted on by hydrochloric acid in the stomach. The answer was decidedly *yes.* He believed that one salt of iron was as good as another in the treatment of anæmia, but they were not all equally well tolerated. Dr Smart had mentioned that he had found that the syrup of the protochloride was not well borne. This he had no doubt was due to the presence of the syrup, which readily fermented in a dyspeptic stomach. If the glyceride of the protochloride had been used instead, it probably would have acted better. He thought that Dr Smart had missed the great point insisted upon by Bunge, namely, that inorganic iron salts were not absorbed as such. It was to this point that all the controversy was directed. Dr Stockman had recently been working at the subject, and had found that this statement was certainly wrong. He had found that citrate of iron, which was practically an inorganic salt, would cure anæmia when injected hypodermically. Then again, he gave by the mouth sulphide of iron, which was fully saturated with sulphur. It was given in keratine capsules, and caused no irritation of the stomach. It was found to cure anæmia as quickly as sulphate of iron. Bunge's contention that sulphuretted hydrogen was generated in the intestinal tract in large quantities in chlorosis was also probably erroneous. There was no doubt that any inorganic salt of iron given in considerable quantity acted perfectly well if properly tolerated.

Dr Smart was glad to know from Dr Gillespie that he held the same view as himself, to the effect that sulphate, as also other salts of iron, combined with hydrochloric acid in the stomach. But he did not agree with him that any salt of iron was as good as another in the treatment of anæmia. The fact that the different salts of iron do not all equally well combine with the hydrochloric acid of the stomach might explain Dr Gillespie's meaning when he referred to their not all being equally well *tolerated*. This difference in their relative assimilability would doubtless have much to do with their relative efficacy. Dr Smart assured Dr Gillespie that he was fully cognisant of Bunge's contention that iron salts, as such, were not absorbed. Bunge's views on that point not being necessarily connected with the object of his paper, his reference to them was only of a passing kind. Dr Smart, alluding to the results obtained from hypodermic injections of inorganic salts of iron, thought they were open to fallacy; as also conclusions deduced from giving these salts by the stomach in capsules. It was difficult to admit Dr Gillespie's view that the severe and protracted troubles of the stomach which followed the giving of the protochloride of iron was due to the fractional quantity of sugar contained in the 30, or even 60 minims of the syrup given after a meal. But, in fact, it was a matter of experience to all who had given the protochloride in any form, that it was badly borne as compared with some of the other salts.

2. *Mr A. G. Miller* read some NOTES ON A NEW INSTRUMENT FOR TREATMENT OF DIFFICULT STRICTURES OF THE URETHRA, which appears at page 307 of this Journal.

3. *Dr W. A. Finlay* read some NOTES OF A CASE OF RUPTURED KIDNEY, WITH RECOVERY AFTER LUMBAR INCISION AND DRAINAGE.

INFORMATION REGARDING MEDICAL EDUCATION AND EXAMINATIONS IN EDINBURGH.

THE Royal College of Physicians of Edinburgh, The Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, have made arrangements by which, after one series of Examinations, held in Edinburgh or in Glasgow, or in Edinburgh and Glasgow, the Student may obtain the Diplomas of the Three Co-operating Bodies.

The object of the Joint Examination is to give to Students facilities for obtaining, after one series of Examinations, the Qualifications in Medicine and Surgery of the three Scottish Corporations. Students passing the Final Examination, which is a qualifying Examination under the Medical Act, 1886, and entitles the holder to practise Medicine, Surgery, and Midwifery, will be enabled to register three Diplomas under the Medical Acts, viz.—Licentiate of the Royal College of Physicians of Edinburgh, Licentiate of the Royal College of Surgeons of Edinburgh, and Licentiate of the Faculty of Physicians and Surgeons of Glasgow.

Female Candidates are admitted to the Examinations for this Qualification equally with male candidates; and throughout these Regulations the masculine pronoun is to be read as standing for Candidates irrespective of sex.

The three Co-operating Bodies grant their *Single* Qualifications only to

Candidates who already possess another and opposite Qualification in Medicine or Surgery, as the case may be. Thus the Royal College of Physicians of Edinburgh may grant its Licence on Examination to Candidates already possessed of a recognised British, Irish, Indian, or Colonial Qualification in Surgery, and the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, may each grant its Licence on Examination to Candidates already Licentiates in Medicine of any British, Irish, or Colonial College whose Preliminary Examination and course of Professional Study is proved to be sufficient, or Graduates in Medicine of any British, Irish, Indian, or Colonial University. Copies of the Regulations for the Single Qualification of any of the Bodies may be had on application to the respective Secretaries.

N.B.—Under the provisions of the Medical Act of 1886, these *Single* Qualifications do not confer the right to registration, but may be registered as additional Qualifications by those already on the Register.

GENERAL REGULATIONS.

Candidates who commenced medical study before 1st January 1892 shall be subjected to three Professional Examinations, herein called the First Examination, the Second Examination, and the Final Examination, to be conducted at separate times, partly in writing, and partly practically and orally. The Regulations applicable to Candidates who commence study after that date may be had on application to Mr James Robertson, Solicitor, 1 George Square, Edinburgh, or to Mr Alexander Duncan, B.A., Faculty Hall, 242 St Vincent Street, Glasgow.

Opportunities of entering for each of these Examinations will be presented six times in each year—four times in Edinburgh and twice in Glasgow. A Candidate at any of these Examinations may present himself either in Edinburgh or Glasgow, irrespective of the place at which he may have previously been examined.

Candidates who are unsuccessful, either at the First, the Second, or the Final Examination, or any part of these Examinations, shall be remitted to their studies for a period to be determined by the judgment of the Examiners, but not in any case less than three months.

Candidates may enter for all the subjects of an Examination at one time, or may enter for and pass in any division of subjects thereof. Candidates who have once entered for an Examination under the divisional system shall not be at liberty to complete that Examination except under the divisional system.

A Candidate may obtain an absolute pass in any subject of an Examination on his obtaining not less than 60 per cent. of the marks in the conjoined Written and Oral, or the Written, Clinical, and Oral parts (as the case may be), although he may at the same time fail in other subjects. In such a case a Record shall be made of the subject or subjects passed, and the Candidate shall be exempt from re-examination in them. On re-examination he shall be required to obtain 60 per cent. of the marks in the remaining subjects. A minimum of 50 per cent. must be obtained at the Oral Examination. The same rule shall apply to Candidates entering for one or more divisions of an Examination.

Applicants for admission to any of the Examinations are required, on entering, to lodge with the Inspector of Certificates a schedule (forms for which are supplied) showing the Courses they have attended qualifying for admission, and if not entering for the whole Examination, must state which subject or division of subjects they are to be examined on.

A Candidate who obtains 75 per cent. on each subject of any of the Three Professional Examinations shall be announced as having passed that Examination "with distinction"; and a Candidate who obtains 70 per cent. of the marks on each subject throughout the whole Examinations shall be announced as having qualified "with honours."

No Candidate can be held to be entered for any Examination till he has sent in the proper schedule, proved his course of study, and paid the appropriate fee.

At the Oral Examinations Candidates shall be examined as far as possible in the order of their entry.

The subjects of the Second Professional Examination should, as far as possible, be studied only after the First Examination has been passed; and similarly, the subjects of the Final Examination should, as far as possible, be studied only after the Second Examination has been passed. By adhering to this course the student will have his attention occupied by preparing for only one Examination at a time.

Candidates, qualified by having attended the necessary courses of study, may, however, enter for two or more Examinations, to be passed successively at the same period, the condition being that failure to pass in all the subjects of any Examination precludes the Candidate from admission to the succeeding Examination. The necessary Schedule and Certificates must be lodged, and the fees for these respective Examinations paid, at the period of entering for the earliest of them. In the event of failure, the fee paid for any subsequent Examination to which a Candidate had been thereby precluded from admission to the Examination will be returned to the Candidate.

No Candidate shall be admissible to Examination who has been rejected on the subjects of the Examination by any other Licensing Board within the three preceding months.

A Candidate for the Second Examination admitted as having passed in the subjects of the First Examination at another Board shall pay the fee of Five Guineas in addition to the fee payable in respect of the Second Examination or any division thereof; and a Candidate for the Final Examination admitted as having passed in the subjects of the First and Second Examinations at another Board shall pay the fee of Ten Guineas in addition to the fee payable in respect of the Final Examination or any division thereof.

The following are the Names and Addresses of the Inspectors of Certificates:—In Edinburgh:—Mr James Robertson, Solicitor, 1 George Square. In Glasgow:—Mr Alexander Duncan, B.A., Faculty Hall, 242 St Vincent Street.

In applying for a copy of the Regulations, Candidates are requested to say whether the date of commencement of Medical Study was before or after 1st January 1892.

The following are the General Medical Council's Requirements for the Preliminary Examination of Medical Students:—

All Medical Students must register in the Medical Students' Register of the General Medical Council before they can be admitted to any Professional Examination. Whenever they have passed the Preliminary Examination in the required subjects, and commenced Medical Study at a recognised Medical School, or at a recognised University or Teaching Institution where subjects of the Medical Course are taught, they should register not later than fifteen days from the commencement of study, and should not neglect this requirement.

Students who commenced Medical Study before January 1st, 1892, shall have previously passed (at one or more Examinations) in the subjects of General Education, as follows:—1. English Language, including Grammar and Composition; 2. Latin, including Grammar, Translation from specified Authors, and Translation of easy passages not taken from such Authors; 3. Elements of Mathematics, comprising (*a*) Arithmetic, including Vulgar and Decimal Fractions; (*b*) Algebra, including Simple Equations; (*c*) Geometry, including the first book of Euclid, with easy questions on the subject-matter of the same; 4. Elementary Mechanics of Solids and Fluids, comprising the Elements of Statics, Dynamics, and Hydrostatics; 5. One of the following optional subjects:—(*a*) Greek; (*b*) French; (*c*) German; (*d*) Italian; (*e*) any other Modern Language; (*f*) Logic; (*g*) Botany; (*h*) Zoology; (*i*) Elementary Chemistry.[1]

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[1] Students who have passed in all the above subjects, with the exception of Mechanics, may commence study, and when they do pass in Mechanics they may be registered, and their registration antedated.

Students who commence Medical Study after January 1st, 1892, shall have previously passed in the subjects of General Education, as follows:—1. English Language, including Grammar and Composition; 2. Latin, including Grammar, Translation from specified Authors, and Translation of easy passages not taken from such Authors; 3. Mathematics, comprising (*a*) Arithmetic; (*b*) Algebra, as far as Simple Equations, inclusive; (*c*) Geometry, the subject-matter of Euclid, Books I., II., and III., with easy deductions; 4. One of the following optional subjects:—(*a*) Greek; (*b*) French; (*c*) German; (*d*) Italian; (*e*) any other Modern Language; (*f*) Logic.

The entire Examination must be passed *at one time*, except in the case of Examinations passed for graduation in Arts of any of the Universities recognised, or in the case of students who have, prior to January 1st, 1892, passed in part of a recognised Preliminary Examination.

No fee is payable for Students' Registration, and Registration when once effected does not require to be repeated in any succeeding year.

Forms of application for Registration may be obtained from James Robertson, Registrar of the Branch Council for Scotland, 1 George Square, Edinburgh.

The following Testimonials of having passed the Preliminary Examination in General Education are accepted by the Licensing Authorities, and entitle to Registration as Medical Students by the General Medical Council:—

(1.) UNIVERSITIES OF THE UNITED KINGDOM.

Oxford.—Examination for a Degree in Arts; Responsions; Moderations; Local Examinations (Senior), Certificate to include Latin and Mathematics; Local Examinations (Junior), Certificate to include Latin and Mathematics; and also one of the following optional subjects, viz., Greek, French, German.

Cambridge.—Examination for a Degree in Arts; Previous Examination; Local Examinations (Senior), Certificate to include Latin and Mathematics; Local Examinations (Junior), Certificate to include Latin and Mathematics, and also one of the following optional subjects, viz., Greek, French, German. Higher Local Examinations.

Durham.—Examination for a Degree in Arts; Examination for Students at the end of their first year; Examination for Certificate of Proficiency.

Oxford and Cambridge Schools' Examination Board.—Certificate to include all the subjects required.

London.—Examination for a Degree in Arts or Science; Preliminary Scientific (M.B.) Examination; Matriculation Examination.

Victoria University.—Preliminary Examination, Latin to be one of the subjects: Entrance Examination in Arts, to include all the subjects required.

Edinburgh.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Science or Medicine and Surgery. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German.

Aberdeen.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Medicine and Surgery; Local Examination (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate); Certificate to include all the subjects required.

Glasgow.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Medicine and Surgery; Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate); Certificate to include all the subjects required.

St Andrews.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Medicine and Surgery; Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate), to include all the subjects required.

Dublin.—Examination for a Degree in Arts; Public Entrance Examination; General Examination at end of Senior Freshman year.

Queen's University (Ireland)[1].—Examination for a Degree in Arts; Entrance or Matriculation Examination; Previous Examination for B.A. Degree; Local Examinations for Men and Women; Certificate to include all the subjects required by the General Medical Council.

Royal University of Ireland.—Matriculation Examination; Examination for a Degree in Arts.

(2.) OTHER BODIES NAMED IN SCHEDULE (A) TO THE MEDICAL ACT (1858).

* *Royal Colleges of Physicians and Surgeons of Ireland.*

* *Royal College of Surgeons in Ireland.*—Preliminary Examination, Certificate to include Mathematics.

* *The Society of Apothecaries of London.*—Examination in Arts.

Note.—The General Medical Council have recommended these bodies marked * to cease holding Preliminary Examinations.

(3.) EXAMINING BODIES IN THE UNITED KINGDOM NOT INCLUDED IN SCHEDULE (A) TO THE MEDICAL ACT (1858).

College of Preceptors. — Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and a Modern Language having been taken.

Intermediate Education Board of Ireland; Junior, Middle, and Senior Grades.—Certificate in each case to include all the subjects required by the General Medical Council.

† *Queen's College, Belfast; Queen's College, Cork; Queen's College, Galway.*—Matriculation Examination.

† *St David's College, Lampeter.*—Responsions Examination to include all the subjects required.

Educational Institute of Scotland.—Preliminary Medical Examination (conducted on behalf of the Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Faculty of Physicians and Surgeons of Glasgow).

† *The Pharmaceutical Society of Great Britain.*—Preliminary and Minor Examinations *pro tanto.*

† *The Pharmaceutical Society of Ireland.*—Preliminary Examination *pro tanto.*

Scotch Education Department.—Leaving Certificates in each Grade and in Honours. All the subjects must have been passed *at one time.*

(4.) INDIAN, COLONIAL, AND FOREIGN UNIVERSITIES AND COLLEGES.

The Certificates from the following Bodies must contain evidence that the Examination passed included all the subjects required by the General Medical Council. In the case of Natives of India or other Oriental countries, whose vernacular is other than English, an Examination in a classic Oriental language may be accepted instead of an Examination in Latin.

Universities of Calcutta, Madras, and Bombay.—Entrance Examination.

M'Gill College, Montreal; Bishop's College, Montreal; and University of Toronto.—Matriculation Examination.

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[1] This University was merged in the Royal University of Ireland in 1881, but Certificates previously obtained are still accepted for registration.

Trinity College, Toronto; Queen's College, Kingston; Victoria College, Upper Canada.—Matriculation Examination.

Western University of Ontario.—Entrance Examination in Medicine.

College of Physicians and Surgeons of Ontario.—Preliminary Examination.

University of Manitoba.—Previous Examination.

King's College, Nova Scotia.—Matriculation Examination; Responsions.

University of Halifax, Nova Scotia.—Matriculation Examination.

University of Fredericton, New Brunswick.—Matriculation Examination.

Mount Allison College, New Brunswick, Canada.—Examination for a Degree in Arts.

Dalhousie College and University, Halifax, Nova Scotia.—Matriculation and Sessional Examinations.

Provincial Medical Board of Nova Scotia.—Matriculation Examination.

† *University of California.*—Examination in Department of Letters.

University of Melbourne.—Matriculation Examination.

University of Sydney.—Matriculation Examination.

University of the Cape of Good Hope.—Matriculation Examination; Examination for a Degree in Arts.

University of Adelaide.—Matriculation Examination or its substitute—the Senior Public Examination, Junior Public Examination.

Codrington College, Barbados.—English Certificate for Students of two years' standing, and Latin Certificate, or "Testamur."

University of Tasmania.—Examination for the Degree of Associate of Arts.

Christ's College, Canterbury, New Zealand.—Voluntary Examinations.

University of New Zealand.—Entrance Examination.

University of Otago, New Zealand.—Preliminary Examination.

Ceylon Medical College.—Preliminary Examination (Primary Class).

Germany and other Continental Countries.—Gymnasial, Abiturienten-Examen, and other Corresponding Entrance Examinations to the Universities.

† *Gymnasia of the Circuit of Dorpat.*—Examinations of Maturity.

Egyptian Government.—Secondary Education Certificate, Arabic being accepted as a classic language in place of Latin.

Note.—The Preliminary Examinations of these Boards marked † will not be accepted for Registration, unless in the case of students who had passed them before 1st January 1892.

The following pages contain a tabular abstract of the regulations of the various Licensing Boards, as well as a list of the Hospitals, Dispensaries, etc., attached to our Edinburgh Medical Schools; also the regulations for the Army, Indian, and Navy Medical Services. The space at our disposal does not allow of more detailed information. But, in point of fact, the regulations of all Licensing Boards now correspond much more closely than they used to do, and the regulations of the General Medical Council afford a key to the general requirements of all of them. For special information, application should always be made to the Secretaries of the Licensing Boards; or, in the case of the Universities, recourse may be had to the published Calendars.

The *Preliminary Examinations* are usually held before the commencement, and at the end, of the Winter Session,—viz., in October, March, or April—sometimes also at the end of the Summer Session. The Professional Examinations in Universities are usually after the Winter and during the Summer Sessions; in Edinburgh, however, the first Professional is held in October as well as April. The other Licensing Boards' Examinations are held at various periods throughout the year. Special Examinations, under circumstances of urgency, can be held at almost any time; but they, of course, entail considerable addition to the expense.

COURSE OF STUDY REQUIRED BY THE VARIOUS BOARDS OF THE UNITED KINGDOM.

	Age.	Anatomy.	Dissections.	Chemistry.	Practical Chemistry.	Materia Medica.	Physiology or Institutes of Medicine.	Surgery.	Practice of Medicine.	Midwifery.	Medical Jurisprudence.	Pathology or Morbid Anatomy.	Botany.	Natural History.	Practical Pharmacy.	Clinical Surgery.	Clinical Medicine.	Hospital Attendance.	Practical Midwifery.	Dispensary or Out-door Practice.	Vaccination.
	Years.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	
Edinburgh University, M.B. & C.M., . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	3 mo.,‡ or 6 cas.	6	
University of Glasgow, M.B. & C.M., . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
University of Aberdeen, M.B. & C.M., .	21	6	6	6	3	6	6	6	6	6	3		3	3	3	6	6	24	do.	6	
University of St Andrews, M.B. & C.M., .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
London University, M.B., ...	21	6	12	6	1 crs.	1 crs.	6	6	6	1 crs.	1 crs.	1 crs.			1 crs.	2 yrs.	2 yrs.	4 yrs.	20 cas.	6	
University of Durham, M.B. & M.D., . .	21												3								
Dublin University, M.B., ...		6	6	6	3	3	3	6	6	6	3		3				9	24	6 mo.		
" " Surgical Diploma, .		12	18	6	3	6	18	12	6	6	3		3			27	27	27			
The Queen's University of Ireland, M.D.,		12	12	6	3	6	12	6	6	6	3		3	3	3 mos.	12	12	24	3 mo.		
Royal College of Physicians, London, .	21	12	12	6	3	3	12	6	12	3	3	6	3		3	9	9	24	20 cas.		
Royal College of Physicians, Edinburgh,	21	6	6	6	3	3	6	6	6	3	3	3	3		3	3	6	24	6 cases		
King and Queen's Col. of Phys. Ireland, .	21	6	12	6	6	6	6	6	6	6	6		6			6	21	27	6 mo.		
Royal College of Surgeons, London,* . .	21	12	12	6		3	12*	12	6	3					3	27*	9*	33			Cert.
Royal College of Surgeons, Dublin, . .	21	18	18	6	6	3	18	18	6	3	3					18	9	27			
Royal College of Surgeons, Edinburgh, .	21	12†	12	6	3	3	6	6†	6	3	3	3			3	9†	9	24	6 cas.	6	Cert.
Faculty of Phys. and Surgeons, Glasgow,	21	12	12	6	3	3	3	6 or 12	6	3	3				3	6 or 12	6	24	6 cas.		
For Triple Qualification by Royal Colleges of Phys. and Surgs. of Edinburgh, and Faculty of Phys. and Surgs. of Glasgow, ...	21	6	12	6	3	3	6	6	6	3	3	3			3	9	9	24	6 cas.	6	Cert.
Apothecaries' Hall, England, ...	21	12	6	6	3	3	6		12	3	3	6	3		Appr.		27	27	20 cas.		9 mo.
" " Ireland, ...	21	6	12	6	3	3	6	6	6	6	3		3		Appr.	9	18	27	20 cas.		

English Poor-Law Board.—Candidates for the appointment of Medical Officer are required to be registered under the Medical Act, and must be legally qualified to practise both Medicine and Surgery, in virtue of Diplomas or Licenses granted by competent legal authority in England, Scotland, or Ireland.

Information respecting exceptions to these regulations under various circumstances, and other details as to the order in which, according to some Licensing Bodies, the courses should be taken out, etc., must be obtained by consulting the published Charts of the Colleges, etc. *Students should apply to the Secretary to each Board which they intend to pass for a detailed copy of its Regulations.*

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* Students from the Schools of Scotland are admitted to examination at the Royal College of Surgeons of England, if they have followed the course of study required by the regulations of the Royal College of Surgeons of Edinburgh. Students in Scotland, therefore, are not required to attend more than one course of Physiology, six months Clinical Surgery, six months Clinical Medicine, and twenty-four months Hospital.

† Or Candidates may take six months Lectures and eighteen months Dissections. A third Course of Surgery is required, but it may be either Principles and Practice of Surgery or Clinical Surgery.

‡ In lieu of the above, the University of Edinburgh requires as an alternative, attendance on at least Twelve Cases of Labour under the superintendence of a registered Medical Practitioner.

MEDICAL SCHOOLS OF SCOTLAND, 1893-94.

WINTER SESSION.

SUBJECTS.	UNIVERSITY OF EDINBURGH.	SCHOOL OF MEDICINE, EDINBURGH.	UNIVERSITY OF GLASGOW.	ANDERSON'S COLL. MED. SCHOOL, GLASGOW.	ST MUNGO'S COLLEGE, GLASGOW.	WESTERN MEDICAL SCHOOL, GLASGOW.	UNIVERSITY OF ABERDEEN.	UNIVERSITY OF ST ANDREWS.
Anatomy, Systematic and Practical, with Demonstrations.	Prof. Sir W. Turner.	Dr J. Symington and Mr Macdonald Brown.†	Professor Cleland.	Dr A. M. Buchanan.	Prof. Kent and Demonstrators.	...	Professor Reid.	Prof. Paterson, Dundee.
Physiology, or Institutes of Medicine, and Practical Physiology.*	Professor Rutherford.	Dr N. Paton.†	Professor M'Kendrick.	Dr D. Campbell Black.	Prof. John Barlow.	...	Professor M'William.	Prof. Pettigrew, St Andrews, Prof. Reid, Dundee.
Chemistry, and Practical Chemistry.	Professor Crum Brown.	Dr Macadam, Mr King, Mr I. Macadam, Mr. R. Paterson, Dr Aitken, and Dr Readman.	Professor J. Ferguson.	Professor J. Robertson Watson	...	...	Prof. Japp.	Professor Purdie, St Andrews, Professor Frankland, Dundee.
Materia Medica & Therapeutics.	Professor Fraser.	Drs Craig & Stockman.†	Professor Charteris.	Vacant.	Prof. John Dougall.	...	Professor Cash.	...
Practice of Medicine.	Professor Grainger Stewart.	Drs Wyllie, James, Affleck, Bramwell, G.A.Gibson, and Philip.†	Professor Gairdner.	Dr S. Gemmell.	Professor Robertson.	...	Professor Finlay.	...
Surgery.	Professor Chiene.	Mr Cathcart, Mr Caird, & Mr Hodsdon.	Professor William Macewen.	Dr Dunlop.	Prof. Clark.	R. H. Parry.	Professor A. Ogston.	Dr MacEwan, Dundee.
Midwifery, etc.	Professor Simpson.	Drs Milne Murray, Matheson, & Haultain.	Vacant.	Dr W. L. Reid.	Prof. Stirton (in Summer).	Dr H. St ClairGray.	Professor Stephenson.	...
Physics.	Professor Tait.	Dr Dawson Turner and Mr Henderson, B.Sc.	Lord Kelvin and M. Maclean, M.A. (in Summer).	Vacant.	Prof. Blyth	...	Prof. Niven.	Prof. Butler, St Andrews, Prof. Steggall, Dundee.
Natural History, and Practical Natural History.	Professor Ewart.	Mr J. Arthur Thomson.	Professor Young.	...	Prof. E. E. Prince.	...	Professor A. Nicholson.	Prof. M'Intosh, St Andrews, Prof. Thompson, Dundee.
Botany and Practical Botany.	Professor Bayley Balfour.	Mr M'Alpine.	...	Prof. King.	Professor Swanson.	...	Prof. Trail (practical).	Prof. Geddes, Dundee, Mr Robertson St Andrews.
General and Practical Pathology.	Professor Greenfield.	Dr A. Bruce, Dr W. Russell, and Dr Leith.	Dr J. Coats, Lecturer.	At Royal or Western Infirmary.	Dr J. L. Steven.	At Western Infirmary.	Professor Hamilton.	...
Clinical Medicine.	Professors G. Stewart, Fraser, Greenfield. and Simpson on Diseases of Women.	Drs Wyllie, Affleck, Smart, and James. Dr H. Croom for Diseases of Women.‡	Prof. M'Call Anderson and Prof. Gairdner.	Physicians of the Royal or Western Infirmary.	Prof. M'Vail and Physicians of the Royal Infirmary.	Physicians of the Western Infirmary.	Prof. Finlay and Drs Fraser and Blaikie Smith.	Dr A. M. Stalker and J. Mackie Whyte, M.A., M.B., Dundee.
Clinical Surgery.	Professor Annandale.	Mr Duncan, Mr Miller, Dr P. H. Maclaren, and Dr MacGillivray.†	Prof. George Buchanan and Prof. Macewen.	Surgeons of the Royal or Western Infirmary.	Prof. Knox and Surgeons of the Royal Infirmary.	Surgeons of the Western Infirmary.	Drs Ogston, Garden, and Booth.	Drs MacEwan and Templeman, Dundee.
Medical Jurisprudence and Public Health	Prof. Sir Douglas Maclagan.	Dr Littlejohn.	Prof. Simpson (in Summer).	Hygiene and Public Health—Dr P. Caldwell Smith and Prof. J. Robertson Watson.	Professor Glaister and Dr M'Vail.‡	...	In Summer.	...

* This course is equivalent to that given under the name of General Anatomy and Physiology in the English Schools Special schedules are issued by the London Boards for their Scotch Students, which should always be inquired for.

† These are not conjoint courses, but separate ones by the gentlemen named. ‡ This is a joint course.

In connexion with the University of Edinburgh, during the Winter Session classes of Practical Materia Medica (including Pharmacy), Physiology, and Practical Pathology are taught by the Professors of these subjects and their Assistants; lectures and clinical instruction on Diseases of Children, at Royal Hospital for Sick Children, are given by Dr James Carmichael and Dr Playfair.

Lectures are given in the School of Medicine, Edinburgh, during the Winter Session, on Biology by Mr A. Thomson and Mr Turnbull; on the Diseases of the Ear by Dr Kirk Duncanson; on Diseases of the Ear and Throat by Dr P. M'Bride; on Diseases of the Eye by Mr George Berry; on Diseases of the Skin by Dr Allan Jamieson and Dr Stewart Stirling; on Diseases of Children by Mr J. Bell, Dr Burn Murdoch, and Dr M. Dunlop; on Infancy and Childhood by Drs John Thomson and J. W. Ballantyne; on Diseases of the Chest by Dr Philip; on Vaccination by Drs Husband and Buist; on Diseases of the Tropics and Climatology by Dr Felkin; on Systematic Gynæcology by Dr Halliday Croom (in Summer); on Practical Midwifery and Clinical Gynæcology by Drs Berry Hart and Brewis; and on Agricultural Chemistry by John Hunter, F.I.C., F.C.S.

There are Special Classes for Women on Chemistry, Anatomy, Biology, Physics, Practice of Physic, Surgery, Materia Medica, Institutes of Medicine, Physiology, Pathology, Clinical Medicine, Clinical Surgery, Diseases of Children, Diseases of the Chest, Vaccination, Diseases of the Tropics and Climatology, Practical Gynæcology, and Natural History. In connexion with the University of Glasgow, Dr Yellowlees lectures on Mental Diseases, and Dr T. Reid on Diseases of the Eye, both in Summer. Practical Surgery is taught during the Winter Session in the University of Aberdeen by Professor Ogston and Assistant.

Lectures are given in St Mungo's College, Glasgow, during the Winter Session, on Advanced Embryology by Prof. Prince; on Gynæcology by Dr Kelly; on Ophthalmology by Prof. Napier; and on Diseases of the Throat and Nose by Dr Fullerton.

Lectures are given in Anderson's College Medical School during the Winter Session, on Ophthalmic Medicine and Surgery by Dr Meighan, on Diseases of the Throat and Nose by Dr John Macintyre, on Aural Surgery by Dr Thomas Barr, and on Zoology by Dr G. Bell Todd. In the Western Medical School Dr A. Brown Kelly lectures on Diseases of the Throat and Nose, and Dr Freeland Fergus on the Eye.

Clinical Instruction in Mental Diseases is given in connexion with University College, Dundee, by Dr Rorie, Royal Asylum, Dundee.

MEDICAL SCHOOLS OF SCOTLAND, 1894.

SUMMER SESSION.

SUBJECTS.	UNIVERSITY OF EDINBURGH.	SCHOOL OF MEDICINE, EDINBURGH.	UNIVERSITY OF GLASGOW.	ANDERSON'S COLLEGE MEDICAL SCHOOL, GLASGOW.	ST MUNGO'S COLLEGE, GLASGOW.	WESTERN MEDICAL SCHOOL, GLASGOW.	UNIVERSITY OF ABERDEEN.
Practical Anatomy and Demonstrations.	Prof. Sir Wm. Turner.	Dr J. Symington and Mr M. Brown.*	Professor Cleland.	Dr A. M. Buchanan.	Prof. Kent and Demonstrators.	...	Professor Reid.
Botany and Practical Botany.	Professor Bayley Balfour.	Mr A. N. M'Alpine.	Professor F. O. Bower.	Prof. King.	Prof. James Swanson.	...	Professor Trail.
Materia Medica and Therapeutics and Practical Materia Medica.	Professor Fraser.	Dr Craig and Dr Stockman.*	Professor Charteris.	Vacant.	Professor Dougall (in Winter).	...	Professor Cash.
Obstetrical and Gynecological Operations.	Professor Simpson.	Drs Croom, B. Hart, and F. Barbour.*	Vacant.	Dr W. L. Reid.	Prof. James Stirton.	Dr H. St Clair Gray.	Prof. W. Stephenson.
Medical Jurisprudence and Public Health.	Professor Sir Douglas Maclagan.	Dr Littlejohn.†	Professor Simpson.‖	Dr T. Kennedy Dalziel.	Prof. Glaister and Dr M'Vail.‡	...	Professor M. Hay.
Practical Anatomy.	Prof. Sir Wm. Turner.	Dr J. Symington and Mr M. Brown.	Professor Young.	...	Prof. Kent.	...	Prof. Reid.
Practical Physiology, incl. Histology.	Professor Rutherford.	Dr Noël Paton.	Professor M'Kendrick.	Dr D. Campbell Black.	Prof. Barlow.	...	Professor M'William.
Practical Pathology.	Professor Greenfield.	Dr A. Bruce, Dr W. Russell, and Dr Leith.	Dr Joseph Coats.	At Royal or Western Infirmary.	Dr J. L. Steven.	At Western Infirmary.	Professor Hamilton.
Organic and Practical Chemistry.	Professor Crum Brown.	Dr Macadam, Mr King, Mr I. Macadam, Mr R. Paterson, Dr A. P. Aitken, and Dr Readman.*	Professor J. Ferguson.	Professor J. Robertson Watson.	...	...	Professor Japp.
Operative Surgery and Surgical Anatomy.	Professor Chiene.	Dr C. W. MacGillivray, Mr C. W. Cathcart, Mr Caird, and Mr Hodsdon.*	Professor William Macewen.	Dr Dunlop.	Dr Whitson.	R. H. Parry.	Professor A. Ogston.
Mental Diseases.	Dr Clouston.	Dr J. B. Tuke.	Dr Yellowlees.	Dr Carswell.	Dr A. C. Clark.	Dr A. R. Gunn.	Dr Reid.
Natural History.	Professor Ewart.	Mr J. Arthur Thomson.	Professor Young.	...	Prof. E. E. Prince (in Winter).	...	Professor Nicholson.
Clinical Medicine.	Professors G. Stewart, Fraser, Greenfield, and Simpson on Diseases of Women.	Drs Wyllie, Affleck, Smart, and James. Dr H Croom for Diseases of Women.‡	Prof. M'Call Anderson and Prof. Gairdner.	Physicians of the Royal or Western Infirmary.	Prof. M'Vail and Physicians of the Royal Infirmary.	Physicians of Western Infirmary.	...
Clinical Surgery.	Professor Annandale.	Mr Duncan, Mr Miller, Dr P.H. Maclaren, and Dr MacGillivray.	Prof. George Buchanan and Prof. Macewen.	Surgeons of the Royal or Western Infirmary.	Prof. Knox and Surgeons of the Royal Infirmary.	Surgeons of West. Infirmary.	...

In connexion with the University of Edinburgh during the Summer Session, classes of Practical Botany, Practical Natural History, and Practical Hygiene, are taught by the Professors of these subjects and their Assistants; lectures and clinical instruction on Diseases of Children, at Royal Hospital for Sick Children, are given by Dr J. Carmichael and Dr Playfair; and on Diseases of the Eye by Dr D. Argyll Robertson. In Glasgow University there are also classes of Practical Botany and Practical Natural History taught by the Professors of these subjects and their Assistants.

In connexion with St Mungo's College, during the Summer Session, Dr Adams will lecture on Surgical Diseases of Children; Dr Love on Otology; Dr Morton on Dermatology; and Dr Workman on Bacteriology.

In connexion with Anderson's College Medical School, during the Summer Session Dr Meighan will lecture on Ophthalmic Medicine and Surgery, and Dr Carswell on Mental Diseases.

In Aberdeen, Special Courses of Instruction are given during the Summer Session on Insanity, Diseases of Children, of the Eye, Ear, and Throat, of the Skin, and in Fevers (City Hospital).

* These are not conjoint courses, but separate ones by the gentlemen named.
† Dr Littlejohn gives courses during both the Winter and Summer Sessions.
‡ This is a joint course. ‖ In Winter.
, For additional Summer Courses on special subjects, see the Prospectus of each School.

In connexion with the Summer Session of the Medical Schools in Scotland, instruction in Vaccination is given at the Royal Public Dispensary, Edinburgh, both Summer and Winter, by Dr Husband; and in the Western Dispensary and Cowgate Dispensary, by Dr Buist; at the Faculty Hall, Glasgow, on Mondays at 2, by Dr Thomson; at the Royal Infirmary, Glasgow, on Mondays and Thursdays at 12 o'clock, by Dr Thomson; and in Aberdeen at the Vaccine Institution.

Medical Psychology and Insanity are taught in Summer by Dr Clouston and Dr J. B. Tuke in Edinburgh, in Glasgow by Dr Yellowlees and Dr A. C. Clark, and in Aberdeen by Dr Reid.

Practical Medicine and Physical Diagnosis by Dr James, Dr Affleck, Dr Gibson, Dr Byrom Bramwell, and Dr Philip in Edinburgh.

Diseases of Children by Mr J. Bell, Dr Burn Murdoch, and Dr M. Dunlop in School of Medicine, Edinburgh; in St Mungo's College by Dr Adams, Glasgow; by Prof. Stephenson, Drs Garden, MacGregor, and Gordon at Children's Hospital, Aberdeen.

Diseases of Infancy and Childhood by Dr John Thomson and Dr J. W. Ballantyne in School of Medicine, Edinburgh.

Diseases of the Chest by Dr R. W. Philip in School of Medicine, Edinburgh.

Diseases of the Eye by Mr George Berry in School of Medicine, Edinburgh, Dr M'Kenzie Davidson in Aberdeen, and by Dr Thomas Reid, Dr Meighan, Prof. Napier, and Dr Freeland Fergus in Glasgow.

Diseases of the Ear by Dr Kirk Duncanson, and Diseases of the Ear and Throat by Dr M'Bride in School of Medicine, Edinburgh; and of the Ear by Dr J. Kerr Love and Dr Barr in Glasgow; of the Nose and Throat by Dr Macintyre in Glasgow; and in Aberdeen, Ear and Larynx Diseases by Dr M'Kenzie Booth.

Diseases of the Throat and Nose by Dr John Macintyre, Dr Fullerton, and Dr A. Brown Kelly in Glasgow.

Diseases of the Skin by Dr Allan Jamieson and Dr Stewart Stirling in School of Medicine, Edinburgh; in Aberdeen by Dr Garden; and in Glasgow by Professor M'Call Anderson and Dr Alex. Morton.

Dental Surgery by Dr W. H. Gray in Glasgow, and Dr Williamson in Aberdeen.

Laryngology and Medical Ophthalmology in Edinburgh by Dr John Wyllie.

Diseases of the Tropics and Climatology in Edinburgh by Dr R. W. Felkin.

Lectures on Public Health are delivered during the Summer Session in Aberdeen by Professor Hay; in School of Medicine, Edinburgh, by Dr Littlejohn; in Glasgow by Prof. Simpson, Dr P. Caldwell Smith, Prof. Glaister, and Dr J. C. M'Vail.

Systematic Gynæcology in School of Medicine, Edinburgh, by Dr Brewis; and in St Mungo's College, Glasgow, by Dr Kelly.

Clinical Gynæcology and Practical Midwifery in School of Medicine, Edinburgh, by Drs Croom and Brewis.

EDINBURGH ASSOCIATION FOR THE UNIVERSITY EDUCATION OF WOMEN.

Women attending the University of Edinburgh are invited to make use of the Rooms recently opened by the Association at 8 Hope Park Square, to whom facilities for study and the use of the Library are offered. L. Stevenson, *Hon. Secretary.*

EDINBURGH SCHOOL OF MEDICINE FOR WOMEN.

This School was established in 1886, by members of the Executive Committee for Promoting the Medical Education of Women (founded in 1871), on the opening of the Examinations of the Conjoint Scottish Colleges to

Women. It occupies premises in Surgeon Square, which are already of historic interest, having been built more than a century ago for a Medical School, and so used, with a short interval, ever since. Its lecture theatre, lighted from above and seated for about two hundred students, has been occupied in succession by Messrs Lizars, Allen Thomson, Lonsdale, Handyside, Spence, and a number of other distinguished men; and its lofty anatomy room is one of the best in Edinburgh. For Clinical Teaching its Students have the use of Leith Hospital, which contains more than a hundred beds, of which a number have hitherto been set apart for Fevers; now, however, a Fever Hospital is being established, and not less than 85 beds will in future be available for medical and surgical patients. The Fees have been fixed on the lowest scale on which it is possible at the same time to adequately remunerate first-rate Lecturers, and to place the School on an ultimately self-supporting basis, viz., £95 for the whole curriculum at School and Hospital, payable in four instalments. *Dean* of the School, Dr Sophia Jex-Blake. *Secretary*, Miss Black, School of Medicine, Surgeon Square.

THE MEDICAL COLLEGE FOR WOMEN, 30 CHAMBERS STREET, EDINBURGH.

This College was founded and is conducted by the "Scottish Association for the Medical Education of Women," with the special object of affording to Lady Students exactly the same facilities for Medical Study as are offered to Male Students in the School of Medicine, Edinburgh. The arrangements for Teaching and the Fees charged are similar to those of the School of Medicine, so that, generally speaking, the regulations of that School may be considered as applicable to the Students of the College. The College affords to Ladies desirous of studying Medicine an opportunity of prosecuting a complete Course of Medical Study, or of attending any individual Class or Classes. The Classes are also open to all Ladies whether studying Medicine or not. *Secretary*, Miss D. M. Scott.

QUEEN MARGARET COLLEGE, WOMEN'S DEPARTMENT OF THE UNIVERSITY OF GLASGOW.

The Universities Commissioners have empowered the Courts of the several Universities of Scotland to admit Women to graduation in such Faculty or Faculties as each Court may think fit, and to provide for the education of candidates either in mixed classes of men and women, or in separate classes. Glasgow University Court has preferred the second of these alternatives, and, at the instance of the Council of Queen Margaret College, has accepted an offer made by the Council to hand over to the University the government, the endowments present and prospective, and, with the consent of the donor, Mrs Elder, the buildings of Queen Margaret College—the endowments and buildings to be reserved for the exclusive Education of Women, and the College to become incorporated with the University as its Department for Women. By this step has been secured the amplest fulfilment of the object continually kept in view by the founders, viz., the provision of a University Education for Women, for now a full curriculum in Arts and in Medicine is given in Queen Margaret College, to women, by University Professors and Lecturers, and attendance on the classes qualifies for admission to the Degrees Examinations of the University. Women have now their own class-rooms, laboratories, and reading rooms, as well as access to the University Library and Museum. They have also access to the wards of the Royal Hospital for Sick Children, and Glasgow Maternity Hospital; while 110 beds are reserved in the Royal Infirmary for Clinical Instruction for Women Students only. *Secretary*, Miss Galloway.

LIST OF HOSPITALS, DISPENSARIES, ETC., IN CONNEXION WITH THE MEDICAL SCHOOLS OF EDINBURGH.

ROYAL INFIRMARY, including LOCK HOSPITAL. (70 Beds reserved for the Clinical Instruction of Women Students.) 740 Beds and 40 Cots. Visits daily from 11 till 2 P.M. Consulting Physicians, Dr George W. Balfour, Professor Sir Douglas Maclagan, Dr Claud Muirhead, and Dr D. J. Brakenridge. Physicians, Professors Grainger Stewart, Fraser, and Greenfield; Drs John Wyllie, J. O. Affleck, Andrew Smart, and Dr Alex. James; Prof. Simpson and Dr J. Halliday Croom (for Diseases of Women); Dr Allan Jamieson (for Diseases of the Skin). Assistant Physicians, Drs Byrom Bramwell, George A. Gibson, Alexander Bruce, R. W. Philip, William Russell, J. Murdoch Brown, Ralph Stockman, and G. Lovell Gulland; Drs D. Berry Hart and A. H. F. Barbour (for Diseases of Women). Assistant Physician for Diseases of the Skin, Dr Norman Walker. Consulting Surgeons, Dr P. H. Watson and Mr Joseph Bell. Consulting Dental Surgeon, Dr John Smith. Surgeons, Professors Annandale and Chiene, Mr John Duncan, Mr A. G. Miller, Dr P. H. Maclaren, and Dr Chas. W. MacGillivray. Assistant Surgeons, Drs J. M. Cotterill, Chas. W. Cathcart, Francis M. Caird, J. W. B. Hodsdon, J. Shaw M'Laren, David Wallace, and Alexis Thomson. Ophthalmic Surgeons, Dr Argyll Robertson and Mr George A. Berry. Surgeon to the Ear and Throat Department, Dr P. M'Bride. Assistant Ophthalmic Surgeons, Drs George Mackay and W. George Sym. Assistant Surgeon to the Ear and Throat Department, Dr R. M. Johnston. Dental Department, Surgeons of the Edinburgh Dental Hospital and School. Pathologists, Drs R. F. C. Leith and Robert Muir. Registrars,—*Medical*, Dr A. L. Gillespie; *Surgical*, Dr K. M. Douglas.

CONVALESCENT HOUSE, Corstorphine. Surgeon, Mr Alex. Matthew.

CHALMERS HOSPITAL FOR THE SICK AND HURT (Public and Private Wards). 40 Beds for medical and surgical patients. In Private Wards the patients are charged 5s. per diem for board. Minimum charge, £1, 1s. Physician, Dr George W. Balfour. Surgeon, Dr P. H. Watson. Resident Medical Officer, Harry Rainy, M.B., C.M. Secretary, J. Wilson Brodie, C.A., 13 Queen Street.

ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL. 30 Beds; about 300 in-patients and 550 out-patients yearly. Consulting Physicians, Drs Moir and Graham Weir. Consulting Surgeon, Professor Annandale. Physicians, Professor Simpson, Drs Halliday Croom, Underhill, and Berry Hart. Assistant Physicians, Drs Freeland Barbour and Milne Murray. Secretary and Treasurer, Andrew Scott, C.A.

ROYAL EDINBURGH HOSPITAL FOR SICK CHILDREN. 80 Beds; number of patients for 1892, 6580. Consulting Physicians, Dr Graham Weir, Dr Geo. W. Balfour, Dr R. Peel Ritchie, and Professor T. Grainger Stewart. Consulting Surgeon, Professor Annandale. Surgeon, Mr Joseph Bell. Assistant Surgeon, Dr H. Stiles. Pathologist, Dr Alexander Bruce. Ordinary Physicians, Dr James Carmichael, Dr John Playfair, and Dr Burn Murdoch. Extra Physicians, Dr G. H. Melville Dunlop, Dr John Thomson, and Dr A. S. Cumming. Surgeon-Dentist, Dr John Smith. Ophthalmic Surgeon, Dr Argyll Robertson. Resident Physicians, Drs J. S. Fowler and J. C. Guthrie. Matron, Miss Bird. Honorary Secretaries, Messrs Henry & Scott, W.S., 20 St Andrew Square.

ROYAL PUBLIC DISPENSARY AND VACCINE INSTITUTION. About 12,000 patients annually. Consulting Physician, Dr George Balfour. Consulting Surgeon, Dr Littlejohn. Medical Officers, Drs W. Husband, D. Wilson, Andrew, P. Young, A. Black, Dunlop, Blaikie, Webster, Wallace, Haultain, and Stiles. Midwifery and Diseases of Women, Drs Andrew, Young, and Dunlop. Vaccination, Dr W. Husband. Diseases of the Ear and Throat, Dr Blaikie. Mental Diseases, Dr J. Batty Tuke, senr. Apothecary, Mr W.

Duncan. Clinique daily at 3 P.M. Vaccination, Wednesday and Saturday, 12 noon. Midwifery and Diseases of Women, Tuesday and Friday, 1 P.M. Laboratory, 3 P.M. and 7 P.M. Secretary, R. C. Gray, S.S.C. James Andrew, M.D., Secretary to the Medical Officers.

NEW TOWN DISPENSARY, 17 Thistle Street. About 10,000 patients annually Medical Officers, Drs Thyne, Dunlop, Miller, Gillespie, Boyd, and Crawford. Acting Physicians-Accoucheur, Drs Wood and Ferguson. Superintendent of Vaccination, Dr Cadell. Diseases of the Ear and Throat, Dr Kemp Brown. Diseases of the Eye, Dr Maddox. Diseases of Women, Dr Brewis. Diseases of Children, Dr Thomson. Mental Diseases, Dr Batty Tuke, jun. Surgical Department, Dr Miles. Clinique daily at 3 P.M. Vaccination on Tuesdays and Fridays at 12.

THE EDINBURGH PROVIDENT DISPENSARY, Marshall Street. Upwards of 12,000 patients annually. Consulting Physician, Dr Andrew Smart. Consulting Surgeon, Dr Joseph Bell. Dental Surgeon, R. Urquhart. Medical Officers, Dr A. Matheson, Dr E. Price, Dr G. Price, Dr Cullen, Dr Booth, Dr G. Mowat, Dr Thyne, and Dr J. Robertson. Assistant Medical Officer, Wm. Wood, M.B., C.M. Scretary, R. Urquhart. Vaccination, Dr Wood (Tuesday and Friday at 1 o'clock). Diseases of Women and Children, Dr Matheson (Tuesday and Friday at 1 o'clock). Out-door practice and Practical Midwifery daily. Surgical Instrument Maker, A. Young, Forrest Road. Janitor, T. Johnstone. Attendance at this Institution qualifies for the University of Edinburgh, the other Universities, and the Royal Colleges of Physicians and Surgeons.

WESTERN DISPENSARY, Chalmers Institute, Ponton Street, Fountainbridge. Chairman, James Simson. Acting Committee, Mrs Black, Miss Thomson, Miss M. Douglas, S. Henderson, Stair Kerr, Dr Bruce Bremner, Wm. Brown, A. Dickison, Dr Pringle, E. Mather, Wm. Manuel, J. Arnot, Rev. G. D. Low, M.A., J. S. Ferrier, Robert Simson, Miss Reid. Consulting Physicians, Dr A. Peddie and Dr Murdoch Brown. Consulting Surgeon, Dr Joseph Bell. Consulting Physician for Diseases of Women, Dr Croom. Physicians, Drs R. A. Fleming, John Stevens, and Gordon Sanders. Surgeon, Dr Alexis Thomson. Diseases of the Ear and Throat, Dr Hunter Mackenzie. Diseases of Women, Dr Ballantyne. Vaccination Officer, Dr J. B. Buist. Midwifery, Dr Ballantyne. Diseases of the Eye, vacant. Assistant to Specialists, Dr Farquharson. Dispenser, A. T. Whyte. Secretary to Medical Board, Dr J. Murdoch Brown. Treasurer, James Simson, 51 Manor Place. Open daily from 3.45 to 4.45 P.M. Diseases of Women, Monday and Thursday, 4.45 P.M. Diseases of Throat and Ear, Monday, 4 P.M. Vaccination, Thursday, 3 P.M. Special Surgical Cases. Wednesday, 4 P.M. Diseases of the Eye, Thursday, 4 P.M.

ROYAL ASYLUM FOR THE INSANE. About 870 patients, over 340 of whom are private patients. Physician, Dr Clouston.

EYE, EAR, AND THROAT INFIRMARY, 6 Cambridge Street, Lothian Road, Edinburgh. Consulting Surgeon, Joseph Bell, F.R.C.S.E. Surgeons, J. J. Kirk Duncanson, M.D., F.R.C.P.E., G. Hunter Mackenzie, M.D., William George Sym, M.D., and Alexander Black, M.D. Eye Clinique daily at 1 P.M. Ear Clinique on Mondays, Thursdays, and Saturdays, at 12 noon. Throat Clinique on Tuesdays and Fridays at 4 P.M.

EYE DISPENSARY OF EDINBURGH, 31 Chambers Street. About 1500 patients annually. Surgeons, Mr Berry and Mr Caverhill. Assist.-Surgeon, Dr Mackay. Open Mondays, Wednesdays, and Fridays, at 1 P.M. Clinical Instruction is given in the Diagnosis and Treatment of Diseases of the Eye (including minor operations) by the Surgeons in charge. Fee for three months' course, £1, 1s.

INCORPORATED EDINBURGH DENTAL HOSPITAL AND SCHOOL, 5 Lauriston Lane. Consulting Physician, Alexander Peddie, M.D., F.R.C.P.E. Consulting Surgeon, Joseph Bell, F.R.C.S.E. Consulting Dental Surgeon, John Smith, M.D., LL.D., F.R.C.S E. Lecturers, Messrs Andrew Wilson, W. Bowman

Macleod, and G. W. Watson. Dental Surgeons, W. Bowman Macleod, A. Wilson, M. Macgregor, G. W. Watson, J. S. Durward, James Mackintosh, and W. Forrester. Assistant Dental Surgeons, John S. Amoore, J. G. Munro, John Turner, David Monroe, F. Page, and T. Gregory. Extra Assistants, Sewill Simmons and R. N. Hannah. Tutorial Dental Surgeon, F. J. Turnbull, L.R.C.P. & S.E. Chloroformists, J. M. Farquharson, M.B., C.M., W. Lundie, M.D., C.M., B.Sc., and Mathieson Cullen, M.D., C.M. Dean, W. Bowman Macleod. Hon. Treasurer, Thomas Wallace, 87 Princes Street. Hon. Secretary, Lindsay Mackersy, W.S., 3A North St David Street. Daily, 9 to 10 A.M. Average number of patients, 8000 per annum.

ARMY MEDICAL DEPARTMENT.

WAR OFFICE, LONDON.

SCHEDULE OF QUALIFICATIONS NECESSARY FOR CANDIDATES DESIROUS OF OBTAINING COMMISSIONS IN THE ARMY MEDICAL STAFF, WITH THE CONDITIONS OF SERVICE.

APPOINTMENT.

1. Every candidate for a commission in the Army Medical Staff must be 21 years and not over 28 years of age at the date of commencement of the competitive examination. He must produce an extract from the register of his birth, or, in default, a declaration, made before a magistrate by one of his parents or guardians, giving his exact age. He must also produce a recommendation from some person of standing in society—not a member of his own family—to the effect that he is of regular and steady habits, and likely in *every* respect to prove creditable to the Department if a commission be granted; and a certificate of moral character from the parochial clergyman, if possible.

2. He must possess two diplomas or licenses, recognised by the General Medical Council, one to practise Medicine and the other Surgery, and must be registered under the Medical Act in force in the United Kingdom at the time of his appointment. A candidate, however, who holds a single diploma from the Society of Apothecaries, obtained under the conditions of the Act of 1886, will be deemed to possess the double qualification required.

2A. Every candidate for a commission in the Medical Staff of the Army must produce, in addition to the documents specified in paragraphs 1 and 2—

(1.) A certificate of having discharged the duties of a medical clinical clerk during 6 months, and of a surgical dresser during another period of 6 months, of which, in each case, not less than three months must have been spent in the wards of a hospital.

(2.) A certificate of having attended a course of instruction during not less than 3 months at an Ophthalmic Hospital, or the Ophthalmic Department of a general hospital, which course shall include instruction in the errors of refraction.

3. The candidate must sign a declaration upon honour that both his parents are of unmixed European blood, and that he labours under no mental or constitutional disease, or hereditary tendency thereto, nor any imperfection or disability that can interfere with the efficient discharge of the duties of a medical officer in any climate: also that he does not hold, and has never held, any commission or appointment in the public services.

4. His physical fitness will be determined by a Board of Medical Officers, who are required to certify that his vision is sufficiently good to enable him to pass the tests laid down by Regulations. The Board must also certify that he is free from organic or other disease, and from constitutional weakness, or other disability of any kind likely to unfit him for military service in any climate.

Certificates of age, registration of diplomas, etc., and of character, must accompany the declaration when signed and returned.

5. A public and open competition will be held twice in the year for the admission of qualified candidates as probationers. The number of appointments so

competed for will be not less than half of the number of vacancies which shall have arisen in the last completed half-year ending on the 30th June or 31st December. It will be competent for the Secretary of State for War to fill up the remaining number from such qualified candidates as may be proposed by the governing bodies of Public Schools of Medicine in the United Kingdom or in the Colonies as he may think proper. Every candidate so proposed must be certified by the governing body proposing him to be duly qualified according to a standard laid down by the Secretary of State, and shall be approved by the Director-General of the Army Medical Department.

The Secretary of State reserves the right of rejecting any candidate who may show a deficiency in his general education, as evinced by bad spelling or composition.

An entrance fee of £1 is required from each candidate admitted to the competition, and is payable at the conclusion of his physical examination, if pronounced fit.

No candidate will be allowed to compete on more than two occasions.

6. The Secretary of State for War will from time to time fix the order of precedence and the proportion in which the several Schools of Medicine shall be offered the nomination of candidates.

7. A Surgeon on probation, on being so nominated, will be sent to some large station for instruction in Ambulance and Medical Staff Corps duties, until the commencement of the next course of study at the Army Medical School, when he will go through such course as the Secretary of State shall decide. After passing a qualifying examination in the military medical subjects taught there, and satisfying the Director-General of the Army Medical Department that he is a person of proper skill, knowledge, and character, for permanent appointment in the Medical Staff, the Surgeon on probation will be commissioned as Surgeon-Lieutenant.

The Surgeons on probation who pass out of the Army Medical School at one qualifying examination will take precedence among each other as Surgeon-Lieutenants, as follows:—(*a.*) Those appointed on nomination according to their date of joining on probation. (*b.*) Those appointed by competition according to the last day of the competitive examination, and in order of merit, as determined by the combined results of the competitive and qualifying examinations, with priority over any joining under paragraph (*a*) on the last day of the competitive examination. Their commissions will bear the date of the day of their passing out of the Army Medical School.

EXAMINATIONS.

1. Candidates will be examined by the Examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows:—*a*. Anatomy and Physiology, 1000; *b*. Surgery, 1000; *c*. Medicine, including Therapeutics and the Diseases of Women and Children, 1000; *d*. Chemistry and Pharmacy, and a practical knowledge of drugs, 1000. [*N.B.*—The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of Medical and Surgical patients at the bedside. The examination in Chemistry will be limited to the elements of the science, and to its application to medicine, pharmacy, and practical hygiene.] No candidate shall be considered eligible for the Medical Staff who shall not have obtained at least *one-third* of the marks obtainable in each of the above *compulsory subjects.*

2. Voluntary subjects for examination.—Candidates may be examined in the following voluntary subjects, for which the maximum number of marks obtainable will be—French and German (150 each), 300; Natural Sciences, 300. A number less than one-third of the marks obtainable in each of these *voluntary subjects* will not be allowed to count in favour of the candidate who has qualified in the *compulsory subjects.* The knowledge of Modern Languages being con-

sidered of great importance, all intending competitors are urged to qualify in French and German. The Natural Sciences will include Comparative Anatomy, Zoology, Natural Philosophy, Physical Geography, and Botany, with special reference to Materia Medica.

The appointments announced for competition will be filled up from the list of qualified candidates arranged in the order of merit, as finally determined by the total number of marks each has obtained in both the compulsory and voluntary subjects.

After passing this examination, every successful candidate will be required to attend one course of practical instruction at the Army Medical School as a Surgeon on probation on—(1) Hygiene; (2) Clinical and Military Medicine; (3) Clinical and Military Surgery; (4) Pathology of Diseases and Injuries incident to Military Service.

All Surgeons on probation will be required to conform to such rules of discipline as the Senate may from time to time enact, and provide themselves with uniform, viz., the regulation undress and mess uniform of a surgeon-lieutenant, including the serge jacket, but without the sword, sword-belt, dress trousers, and badge of rank.

They will be required to attend the Medical Staff Mess at Netley, and to conform to the Rules and Regulations thereof.

RANK AND PAY.

The ranks and daily rates of pay of the officers of the Army Medical Staff are as follows:—Surgeon-Major-General, £2, 15s.; Surgeon-Colonel, £2; Brigade-Surgeon Lieutenant-Colonel, £1, 10s., after five years in the rank, £1, 13s.; Surgeon-Lieutenant-Colonel, £1, after twenty years' service £1, 5s., after twenty-five years' service £1, 7s. 6d.; Surgeon-Major or Surgeon-Lieutenant-Colonel, £1, after fifteen years' service £1, 2s. 6d.; Surgeon-Captain or Surgeon-Lieutenant, £200 a year, after five years' service £250, after ten years' service 15s. daily. Surgeon on probation, 8s.

INDIAN MEDICAL SERVICE.

REGULATIONS FOR THE EXAMINATION OF CANDIDATES FOR ADMISSION TO HER MAJESTY'S INDIAN MEDICAL SERVICE.

(*Subject to any alteration that may be determined on.*)

1. *Limits of Age.*—All natural-born subjects of Her Majesty, between 21 and 28 years of age at the date of the examination, and of sound bodily health, may be candidates. They may be married or unmarried. They must possess a Diploma or Diplomas entitling them under the Medical Acts to practise both Medicine and Surgery in Great Britain and Ireland.

2. *Declaration to be submitted.*—They must subscribe and send in to the Military Secretary, India Office, Westminster, *so as to reach that address at least a fortnight before the date fixed for the Examination*, a declaration according to a prescribed form.

3. This declaration must be accompanied by the following documents:—

a. Proof of age, either by Registrar General's certificate, or, where such certificate is unattainable, by the candidate's own statutory declaration, form of which can be obtained at the India Office, supported, if required by the Secretary of State, by such evidence as he may consider satisfactory. A certificate of baptism which does not afford proof of age will be useless.

b. A recommendation from some person of standing in society—not a member of his own family—to the effect that he is of regular and steady habits, and likely in every respect to prove creditable to the service if admitted; and a certificate of moral character from a magistrate, or a minister of the religious denomination to which the candidate belongs.

c. A certificate of registration, under the Medical Acts, of the degrees, diplomas, and licenses possessed by the candidate.

4. *Physical Examination.*—The physical fitness of each candidate will be determined previous to examination by a Board of Medical Officers, who are required to certify that his vision is sufficiently good to enable him to perform any surgical operation without the aid of glasses. A moderate degree of myopia will not be considered a disqualification, provided it does not necessitate the use of glasses during the performance of operations, and that no organic disease of the eyes exists.

Every candidate must also be free from all other organic disease and from constitutional weakness, or other disability likely to unfit him for military service in India.

5. *Subjects for Examination.*—On producing the foregoing qualifications, the candidate will be examined by the Examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows :—

	Marks.
a. Anatomy and Physiology,	1000
b. Surgery,	1000
c. Medicine, including Therapeutics, the Diseases of Women and Children,	1000
d. Chemistry and Pharmacy, and a practical knowledge of Drugs,	1000

(The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of medical and surgical patients at the bedside.)

The examination in Chemistry will be limited to the elements of the science, and to its application to medicine, pharmacy, and practical hygiene.

No candidate shall be considered eligible who shall not have obtained at least *one-third* of the marks obtainable in each of the above *compulsory subjects.*

6. *Voluntary Subjects.*—Candidates may be examined in the following voluntary subjects, for which the maximum number of marks obtainable will be :—

	Marks.
French, German, and Hindustani (150 each),	450
Natural Sciences,	300

The Natural Sciences will include Comparative Anatomy, Zoology, Natural Philosophy, Physical Geography, and Botany, with special reference to Materia Medica.

A number less than one-third of the marks obtainable in any of these *voluntary subjects* will not be allowed to count in favour of a candidate who has qualified in the *compulsory subjects.*

The knowledge of modern languages being considered of great importance, all intending competitors are urged to qualify in French and German.

Candidates presenting themselves for examination in Hindustani are recommended to study some recognised text-book, such as the annotated edition of the "Taubat-un-Nasuk," which is the text used by candidates for the Indian Civil Service.

7. The appointments announced for competition will be filled up from the list of qualified candidates arranged in order of merit, as finally determined by the total number of marks each has obtained in both the compulsory and voluntary subjects.

The Examiners in London will prepare a list in order of merit, with the marks affixed in the different subjects, to be transmitted to the Director-General and communicated to the Professors of the Army Medical School. If any candidate is found to be deficient in any particular subject, this shall be stated, in order that he may receive special instruction on the point at Netley.

8. *Course at Netley.*—After passing this examination the successful candidates will be required to attend one entire course of practical instruction at the Army Medical School in—

(1.) Hygiene.
(2.) Clinical and Military Medicine.
(3.) Clinical and Military Surgery.
(4.) Pathology of Diseases and Injuries incidental to Military Service.

These courses are to be of not less than four months' duration; but candidates who have already gone through a course at Netley as candidates for the Army Medical Service may, if thought desirable, be exempted from attending the School a second time.

9. *Pay and Uniform while at Netley.*—During the period of residence at the Army Medical School, each candidate will receive an allowance of 8s. per diem with quarters, or, when quarters are not provided, with the usual fuel and light allowances of a subaltern, to cover all costs of maintenance; and he will be required to provide himself with uniform (viz., the regulation undress uniform of a Surgeon-Lieutenant of the British Service, but without the sword).

10. All candidates will be required to conform to such rules of discipline as the Senate may from time to time enact.

11. *Examination at Netley.*—At the conclusion of the course, candidates will be required to pass an examination on the subjects taught in the School. The examination will be conducted by the Professors of the School.

The Director-General, or any Medical Officer deputed by him, may be present and take part in the examination. If the candidate give satisfactory evidence of being qualified for the practical duties of an Army Medical Officer, he will be eligible for a Commission as Surgeon-Lieutenant.

12. *Position on List, how determined.*—The position of the candidates on the list of Surgeon-Lieutenants will be determined by the combined results of the preliminary and of the final examinations, and, so far as the requirements of the service will permit, they will have the choice of Presidency in India according to their position in that list.

13. No candidate will be permitted to compete more than twice.

MEMORANDUM REGARDING THE POSITION OF OFFICERS TO BE APPOINTED TO HER MAJESTY'S INDIAN MEDICAL SERVICE.

Passage to India.—Officers on appointment will, if possible, be provided with passage to India by troop-ship; but when troop-ship accommodation is not available, passage at the public expense will be provided by steamer, or a passage allowance will be granted, if preferred. A charge for messing during the voyage will be made at the rate of 2s. a day. This payment will not include the cost of liquors, which will be charged for as extras.

All Officers who shall neglect or refuse to proceed to India under the orders of the Secretary of State for India within two months from the date of leaving Netley, will be considered as having forfeited their appointments, unless special circumstances shall justify a departure from this regulation.

Pay previous to Arrival in India.—The rate of pay drawn by Surgeon-Lieutenants from the date of passing the final examination at the Army Medical School until arrival in India will be 10s. a day.

Pay at the above rate will be issued in this country up to the date of embarkation, and an advance of two months' pay at the same rate will also be made prior to embarkation.

Grades and Precedence.—The grades of Officers in the Indian Medical Service are seven in number, viz.:—1. Surgeon-Major-General. 2. Surgeon-Colonel. 3. Brigade-Surgeon-Lieutenant-Colonel. 4. Surgeon-Lieutenant-Colonel. 5. Surgeon-Major. 6. Surgeon-Captain. 7. Surgeon-Lieutenant. These ranks carry precedence and generally other advantages attaching to the rank indicated by the military portion of the title.

Pay and Allowances when in India.—Officers appointed to the Indian Medical Service will receive pay in India according to the following scale when not holding an appointment carrying higher pay:—

Rank.	Years' Service.	Pay and Allowances per Mensem.		
		R.	A.	P.
Brigade - Surgeon - Lieut.-Colonel and Surg. - Lieutenant-Colonel	25	888	12	0
Surgeon-Lieut.-Colonel	20	852	3	7
Surgeon-Major . .	15	677	6	11
,, . .	12	640	14	6
Surgeon-Captain . .	10	451	14	5*
,, . .	6	433	10	2*
,, . .	5	335	12	2*
Surgeon-Captain and Surg.-Lieutenant	under 5	317	8	0*

* When not receiving any staff allowance.

On first appointment they will only come into receipt of Indian pay and allowances from the date of their arrival in India.

The monthly salaries of officers holding the principal administrative appointments and substantive military charges of the Indian Medical Service receive, at present, the following consolidated salaries :—Surgeon-Major-General, Bengal, Rs. 2700; Madras, Rs. 2500; Bombay, Rs. 2500; Surgeon-Colonel, from Rs. 2250 to Rs. 1800; Brigade-Surgeon-Lieutenant-Colonel or Surgeon-Lieutenant-Colonel, of twenty years' service and upwards, in substantive charge of a Native regiment, Rs. 1000, with Rs. 90 horse allowance in Cavalry regiments; Surgeon-Major, under twenty years' service, in substantive charge of a Native regiment, Rs. 800, with Rs. 90 horse allowance in Cavalry regiments; Surgeon-Captain, above five years' full-pay service, in substantive charge of a Native regiment, Rs. 600, with Rs. 60 horse allowance in Cavalry regiments; Surgeon-Captain or Surgeon-Lieutenant, under five years' full-pay service, in substantive charge of a Native regiment, Rs. 450, with Rs. 60 horse allowance in Cavalry regiments. The salaries of other substantive medical appointments in the Civil and Military Departments are consolidated, and vary from Rs. 1800 to Rs. 400 per mensem. Qualified officers of the Medical Service are also eligible for appointments in the Assay Department. The salaries of these appointments are from Rs. 600 to Rs. 2250 per mensem. Officers are required to perform two years' regimental duty in India before they can be considered eligible for civil employment.

Retiring Pensions and Half-Pay.—Officers of the Indian Medical Service will be allowed to retire on the following scale of pension, on completion of the required periods of service :—After thirty years' service for pension, £700; after twenty-five years' service for pension, £500; after twenty years' service for pension, £365; after seventeen years' service for pension, £292. Time of service for pension will reckon from date of first commission. A Surgeon-Major-General, after five years' active employment in India in that appointment, will be entitled to retire upon a pension of £350 per annum, in addition to that to which he may be entitled under the above scale. A Surgeon-Colonel will, after five years' active employment in India in that appointment, be entitled to retire upon a pension of £250 per annum, in addition to the pension to which he may be entitled under the above scale.

A Surgeon-Major-General or Surgeon-Colonel who has completed his term of service and has reverted to British pay, may reside in Europe, at the same time qualifying for higher pension.

With a view to maintain the efficiency of the service, all Officers of the rank of Brigade-Surgeon-Lieutenant-Colonel, Surgeon-Lieutenant-Colonel, and Surgeon-Major shall be placed on the Retired List when they shall have attained the age of fifty-five years, and all Surgeon-Major-Generals and

Surgeon-Colonels when they shall have attained the age of sixty years. In any special case, where it would appear to be for the good of the service that the Officer should continue in employment, he may be so continued, subject in each case to the sanction of the Secretary of State for India in Council.

Officers hereafter admitted to the Indian Medical Service will, after retirement on pension before completing thirty years' service, be liable to recall to military duty, in case of any great emergency arising, up to 55 years of age.

Wound Pensions.—Officers are entitled to the same allowances on account of wounds and injuries received in action as are granted to combatant Officers of Her Majesty's Indian Military Forces holding the corresponding military rank.

Family Pensions.—The widows and families of Officers are also entitled to pensions from the Indian Service Family Pension Fund, to which all Officers must, as a condition of their appointment, subscribe from the date of their arrival in India.

NAVY MEDICAL DEPARTMENT.

Admiralty, Northumberland Avenue, London, W.C.

REGULATIONS FOR ENTRY OF CANDIDATES FOR COMMISSIONS IN THE MEDICAL DEPARTMENT OF THE ROYAL NAVY.

1. Every candidate for admission into the Medical Department of the Royal Navy must be not under 21 nor over 28 years of age on the day of the commencement of the competitive examination. He must produce an extract from the register of the date of his birth; or, in default, a declaration made before a magistrate, from one of his parents or other near relative, stating the date of birth. He must also produce a certificate of moral character up to date, and a recommendation signed by a clergyman or magistrate to whom he has been for some years personally known, or by the president or senior professor of the college at which he was educated.

2. He must be registered, under the Medical Act in force, as qualified to practise Medicine and Surgery in Great Britain and Ireland.

3. He must declare that he is a British subject, the son of parents of unmixed European blood; that he labours under no mental or constitutional disease or weakness, or any other imperfection or disability which may interfere with the most efficient discharge of the duties of a medical officer in any climate; and whether he holds or has held any commission or appointment in the public services.

He must also declare his readiness to engage for general service at home or abroad as required.

He must be free from organic or other disease, and his physical fitness will be determined by a Board of Medical Officers, who are to certify that his vision comes up to the required standard, which will be ascertained by the use of Snellen's test types.

The certificates of registration, character, and birth must accompany the declaration, which is to be filled up and returned as soon as possible, addressed as above.

4. Candidates will be examined by the Examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows:—Anatomy and Physiology (1000 marks); Surgery (1000 marks); Medicine, including the Diseases of Women and Children (1000 marks); Chemistry and Materia Medica, and a practical knowledge of Drugs (1000 marks). (The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of Surgical Apparatus, and the examination of Medical and Surgical patients at the bedside. The examination in Chemistry will be limited to the elements of the Science, and to its application to Medicine, Pharmacy, and Practical Hygiene; and the examination in Materia Medica will include a knowledge of the physiological actions and therapeutical uses of Drugs.)

No candidate shall be considered eligible who shall not have obtained at least *one-third* of the maximum marks in each of the above *compulsory subjects.*

5. Candidates may be examined in the following voluntary subjects, for which the maximum number of marks obtainable will be :—French and German (150 each), 300 marks : Biology, Physics, and Physical Geography (100 each), 300 marks. A number less than one-third of the marks obtainable in each of these *voluntary subjects* will not be allowed to count in favour of the candidate who has qualified in the *compulsory subjects.*

The knowledge of modern languages being considered of great importance, all intending competitors are urged to qualify in French and German.

The Natural Sciences will include Biology, Physics, and Physical Geography.

6. The appointments announced for competition will be filled up from the list of qualified candidates arranged in the order of merit as finally determined by the total number of marks each has obtained in both the compulsory and voluntary subjects.

7. Successful candidates, immediately after passing the examination, will receive Commissions as Surgeons in the Royal Navy, and will undergo a course of practical instruction in Naval Hygiene, etc., at Haslar Hospital.

8. A fee of £1 will have to be paid by each candidate to entitle him to take part in the competition.

The full and half-pay per day of Naval Medical Officers is in accordance with the following scale :—FULL-PAY : Surgeon—On entry, 11s. 6d. ; after 4 years' full-pay service, 13s. 6d. ; after 8 ditto, 15s. 6d. Staff Surgeon—On promotion, £1, 1s. ; after 4 years' full-pay service in rank, £1, 4s. Fleet Surgeon—On promotion, £1, 7s. ; after 4 years' full-pay service in rank, £1, 10s. ; after 8 ditto, £1, 13s. Deputy Inspector General, £2, 2s. Inspector General, £2, 15s. On first appointment to the service, medical officers will receive full pay from date of appointment, but subject to the provisions of Art. 1342, clause 2, of the Queen's Regulations, 1893. HALF-PAY : Surgeon—Under 2 years' full-pay service, 6s. ; after 2 years' full-pay service, 7s. ; after 4 ditto, 8s. ; after 6 ditto, 9s. ; after 8 ditto, 10s. ; after 10 ditto, 11s. ; Staff Surgeon—On promotion, 12s. ; after two years' full-pay service in rank, 13s. ; after 4 ditto, 14s. ; after 6 ditto, 15s. Fleet Surgeon—On promotion, 17s. ; after two years' full-pay service in rank, 18s. ; after 4 ditto, 19s. ; after 6 ditto, £1. Deputy Inspector General—On promotion, £1, 5s. ; after 2 years' full-pay service in rank, £1, 7s. ; after 4 ditto, £1, 9s. Inspector General, £1, 18s.

Part Fourth.

PERISCOPE.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary ; Lecturer on Diseases of the Skin, Edinburgh School of Medicine ; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

KERATOSIS OF THE PALMS AND SOLES, PROBABLY DUE TO ARSENIC.—The administration of arsenic, in certain persons, excites, amongst other effects, peripheral nerve and vascular lesions, evidenced particularly on the palms and soles. Redness of the palms and puffiness of the hands are mentioned by several writers. Pringle, Crocker, and Brooke have directed attention to keratosic conditions probably occasioned by arsenic, Hutchinson has dealt with the subject of arsenical warts or corns, as did also Erasmus Wilson and M'Call Anderson, while others have noted the occurrence of hyperidrosis. Dr Colcott Fox has related an interesting case which bears on the point. The patient was a man, aged 20, from Australia, who was believed to have had syphilis, but who had taken arsenic in various forms for a prolonged period. He was pale, but his face had a peculiar and slight muddy tint. The neck was rough and dirty-looking, and his body much mottled with pigmentation, which Dr Fox thought due to arsenic and not to preexisting eruptions. The skin generally of the limbs and body was harsh and dry, with indications of faint desquamation, but without any psoriasiform patches on the elbows or elsewhere. The palms and soles presented a considerable thickening of the epidermis, simulating hereditary congenital keratosis. The thickening, though apparently diffuse and uniform, was seen on close inspection to exhibit a number of distinct lesions, like plane warts, set in the general keratosis. There was no history of hyperidrosis, nor was any special development of the lesions in connexion with the sweat-ducts detectable. The palms and soles were thoroughly soaked in soda and hot water each day, and when the epidermis was sufficiently macerated, vigorously attacked with pumice stone. Then Unna's strong salicylic acid plasters were applied night and morning, and worn throughout the twenty-four hours at first. Under this treatment the condition soon became ameliorated, only isolated warts remaining to be dealt with, and finally the feet and hands were quite cured. The morbid condition was either syphilitic or arsenical, the probability being in favour of the latter. —*British Journal of Dermatology*, February 1893.

EXPERIENCE IN THE TREATMENT OF CHRONIC RINGWORM IN AN INSTITUTION.—Dr Duhring has favoured us with his experience in the treatment of chronic ringworm affecting in all forty-eight boys, the occupants of a large institution in America. The ages ranged from 8 to 12, the average being 10. The disease had lasted from six months to three years, the average being one year. The majority were thin, and without much stamina, though there were exceptions. Thirty-two of the cases were severe ones. Careful notes of each case were taken, and its progress under treatment recorded. The hair, as a rule, was clipped short about once a week, but in some cases the scalp was regularly shaved every few days. In either case the applications were brought into the closest possible contact with the follicles, chiefly by friction with oils and ointments. In the selection of remedies and the formulæ, due regard was given to the age, development, complexion, and general nutrition of the patient. Those of dark complexion, as was to be expected, tolerated much stronger formulæ than those with light hair. From time to time it became necessary to use cleansing agents, with the view of clearing the surface of scale, crust, and débris, the result either of the disease or of the remedies. For this a mixture of soft soap and sulphur was generally used, preceded by inunctions with carbolized oil; in other cases, where the crusting was excessive, adherent, or painful, a linseed poultice was applied for a short period. Various parasiticides were employed, and the conclusions drawn are of much interest. Carbolic acid, either alone or in combination with sulphur ointment and that of the nitrate of mercury, did not prove so curative as some other drugs. Duhring is inclined to give it a comparatively low rank as a parasiticide in this disease. Nothing favourable can be said either of tar or iodine. Oleate of copper, in the strength of one to two drachms to the ounce of petroleum jelly, was, after a fair trial, abandoned, as it seemed to possess no curative merits. It neither irritated the scalp nor in any degree allayed the symptoms. Nor did the mercurials, the oleate included, in from ten to thirty per cent. prove any more effectual. Calomel was of value in subduing inflammatory action; with ointment of oxide of zinc, half a drachm to the ounce, it was found serviceable when active parasiticides would not be borne. Croton oil, in sluggish cases, proved especially useful in provoking acute purulent inflammatory action. After this had been well established the milder parasiticides, as sulphur ointments, were advantageously prescribed. The two most efficacious remedies were sulphur alone and chrysarobin in the form of ointments. Sulphur was used in the strength of from one to three drachms to the ounce. As a weak ointment it was especially serviceable after the stronger remedies, and more particularly in clearing up scurfiness. In the stronger form it proved an efficient mild parasiticide. The most potent and active was chrysarobin. The strength was from fifteen grains to two drachms to the ounce; the proportion was most commonly one drachm. It should invariably be applied in the smallest possible quantity, and well rubbed in with a bit of cloth or a mop. Used with caution, the staining of the skin of both patient and nurse may be reduced to a minimum. In some cases inflammation of the scalp and face, sometimes of the eyes, occurred; this inflammation passed off in the form of desquamation of large papery masses of scale. There does not seem to be much danger from its employment if applied under the supervision of the physician, and if due care be exercised in avoiding the face, in making the applications sparingly, and in gradually increasing the strength. It proved the most valuable parasiticide in the list, which embraced most of those recommended.—*American Journal of the Medical Sciences*, February 1893.

TREATMENT OF LUPUS ERYTHEMATOSUS BY PHOSPHORUS INTERNALLY.—Bulkley states that in a very considerable number of cases of lupus erythematosus he has seen the lesions subside and entirely disappear under the administration of phosphorus, and he has observed many of these for a length of time after treatment. He believes that properly given and with due precautions it is perfectly safe. Some of his patients have taken it continuously for months, not only without harm, but in some instances with marked improvement to their general health. He prescribes in form suggested by Dr Ashburton Thompson, which consists in dissolving 6 grains of phosphorus in 30 drachms of absolute alcohol with the aid of heat and agitation, and this is then mixed, while still warm, with the following ingredients, also warm: Glycerin $9\frac{1}{2}$ ounces, alcohol $1\frac{1}{2}$ ounce, essence of peppermint $\frac{1}{2}$ ounce. Each drachm contains $\frac{1}{20}$th of a grain of phosphorus. He usually commences with 15 drops, mixed quickly with water and taken at once, three times a day after meals. The dose may be cautiously increased by one or two drops daily till 30 are taken three times a day, then still more carefully by one drop each second day till 40 or 45 are reached. In rare cases, if it agrees, even a little more may be given thrice a day, but he has never given as much as 60. As the disease yields the dosage is continued, if well borne, even till the lesions have quite disappeared and superficial cicatrization has taken place. The patients must be well watched while taking the remedy; any disturbance of the tongue and of the digestion indicates that it should be stopped for the time. If there is constipation or liver disturbance he gives blue pill with colocynth and ipecacuanha, repeated if necessary. In the intervals of administration he prescribes full doses of nitric acid, well diluted, after each meal. If much flushing and heat in the eruption, he orders, in place of the nitric acid, 15 grains of acetate of potass with nux vomica and fluid extract of rumex, well diluted, half an hour before meals; this given for a time has a beneficial effect on the eruption, and seems to intensify the action of the phosphorus when resumed.—*American Journal of the Medical Sciences*, April 1893.

Part Fifth.

MEDICAL NEWS.

List of successful Candidates for Commissions in the Medical Staff of Her Majesty's Army, at the recent Examination in London.

Order of Merit.	Names.	Number of Marks.
1.	Master, A. E.,	2421
2.	Prynne, H. V.,	2373
3.	Dansey Browning, G.,	2271
4.	Barnett, K. B.,	2117
5.	Fleury, C. M.,	2090
6.	Cameron, K. M.,	2050
7.	Clark, E. S.,	2043
8.	Boyle, M.,	2036
9.	Fox, A. C.,	2012
10.	Tibbits, W.,	2009
11.	Corbett, W. J.,	1986
12.	Green, S. F. St D.,	1978

OBITUARY.

JAMES BLACK, Esq., L.R.C.S. Ed., Late of COLDINGHAM.

This well-known and highly-respected practitioner died at the residence of his son-in-law, Dowlaw, near Coldingham, on Saturday, August 26th, after a short illness which succeeded a chill and ended in uræmic poisoning. For thirty-eight years he practised with great acceptance in Coldingham, from which place he retired about three years ago and returned to Dunbar, where his son, Dr James D. Black, is in practice. His retirement did not imply idleness, for he did much work for and with his son, and, indeed, may be said to have died in harness. His frank, pleasant manner made him much beloved both by rich and poor, and his skill and experience have made his name much respected in Coldingham, with which place he was so long associated. He is survived by two sons, both medical men in practice, and by four daughters. Though he had done so much work, and his name had been so long a household word, he was not an old man, having only reached the age of sixty-four.

CORRESPONDENCE.

ANATOMY UNDER THE NEW FIVE-YEAR COURSE OF STUDY, AND METHOD OF EDUCATION.

By Emeritus Professor **Struthers**.

(*To the Editor of the Edinburgh Medical Journal.*)

Sir,—Although the five-year course of medical study was enacted by the General Medical Council in 1890, to take effect on and after 1st January 1892, it would appear that the implied change in regard to the time and the method of beginning Anatomy under the new system is not yet realized. In taking my part in the Council in requiring a five-year course I was fully aware that it implied a re-arrangement of our anatomical teaching, and had thought out how the change could be effected without in any respect proving injurious to the study of that fundamental subject in medical education.

Before enacting a five-year course the Council had before it Reports in regard to the systems of medical education pursued on the Continent and in each division of the United Kingdom, prepared by me after careful inquiry as to the arrangements and their working. The objects the Council had in view in enacting a five-year course for the United Kingdom may be shortly stated thus:—(1) To effect a much needed improvement in the preliminary examination in general education prior to the commencement of professional study; (2) to give a first year to practical education in physics, chemistry, and biology, and the acquisition of the habits of observation and reasoning which such studies foster; followed by three years attendance on professional classes and hospital; and (3) to give a final year exclusively to clinical work. Such an arrangement, in a five-year course, may be termed an ideally perfect one, and marks a great step in advance in medical education in the United Kingdom.

The enactments of the General Medical Council have been cordially adopted by the Scottish Universities' Commissioners in their Ordinances regulating medical graduation in Scotland, and it is to the large body of students coming under these Ordinances that the following considerations more particularly apply. Under the late four-year system, the first Winter Session was devoted to anatomy and chemistry, the former occupying by far the greater part of the time and attention of the student. In regard to the second year, every teacher of anatomy, physiology, and surgery in Scotland has felt how seriously the thoughts of the student were distracted from these important professional studies by the examinations in botany, zoology, and chemistry, one or more, not having been allowed or overtaken before the second year began. That long-standing difficulty has now been brought to a solution by the addition of the subject of physics to the early sciences included in the curriculum—in lieu of the old and unsatisfactory examination in mechanics in the preliminary examination—a subject, it will be granted, not second in importance to botany or zoology in medicine. By the new Ordinances for our Universities, the simple and satisfactory law now is, that the examination in the four subjects, botany, zoology, chemistry, and physics, may be taken at any examination-period after the required courses have been attended ; and the four subjects are grouped two and two (any two) for examination. The student is, therefore, now in the fortunate position of being able to overtake these studies and the examination in them within a winter and a summer session ; and, thus prepared by his year of training in these auxiliary sciences, is free to devote the whole of the old period of four years to strictly professional studies without distraction.

It will be manifest, on a little reflection, that these four subjects—not merely the attending a course of lectures in each, but that practical and thoughtful study of them which is necessary to their utility—form together a pretty full year's work, and that there is no room left for the old method of devoting the first winter session mainly to anatomy. If the beginner should blunder or be advised into beginning in the old way, it means the throwing of his examination anxieties, in at least two of these sciences, over into the second year ; the dislocation of the studies of that year ; or the throwing away of a subsequent summer session to make up the lost ground. On the one hand, there is the consideration that a first year so spent is of high value in the intention to qualify the medical practitioner of the future to deal with problems in biological and physical science which more and more are being recognised as intimately connected with preventive and curative medicine and surgery ; on the other hand, there is the consideration that these subjects should not be pushed too far as pure sciences, so as to run over into the second year and encroach on the time required for subjects of still more importance. What is essential to the success of the earlier part of our new system is the condition that nothing should be allowed to interfere with the efficiency of such a first year, and that the examination in these auxiliary sciences should be passed by the end of the first year. To that condition all other considerations must yield. Everything incompatible with it should be put aside.

While holding that view, I desire at the same time to express the view that these first-year biological studies would not be hindered but would be helped by being associated with a certain kind and amount of anatomical study, in a course specially arranged for the purpose. A winter course, embracing human osteology followed by quite a general view of the soft parts, the whole not to occupy more than one hour a-day ; two demonstrative lectures a-week, the alternate days for objective study and some training in careful dissection ; the first half of the course to osteology, the alternate days in the bone-room ; the second half to a general view of the soft parts, the alternate days in the anatomical museum and in a dissecting-room, acquiring, by the dissection of a limb, the method of careful dissection and familiarity with tissues. I believe that an hour a-day, not more, so spent would be a great help to zoological study as well as valuable in itself. It would require no reading beyond that done within the one hour on the objects before the eye.

I am satisfied that there is no introduction to method in biological study so good as that with which the medical student has hitherto begun, viz., human osteology, especially when accompanied with a certain amount of available comparative osteology. The student, new to all such study, sees everything, handles everything, acquires the habit of observing for himself, instead of the schoolboy habit of committing to memory the words of the teacher or of the book. He acquires also the critical spirit, the spirit that demands to see and be satisfied of everything, and with such a beginning he is likely to carry these habits into his subsequent studies. It is only those who have been accustomed to sit among beginners, training them to observe for themselves on the bones placed in their hands, who can understand the mental condition of the ripe schoolboy or the Arts graduate, when first plunged into biological study by observation. After a little bewilderment, he becomes conscious of a new power and eagerly exercises it. Zoology, though approaching anatomy in its nature, is too wide and necessarily too general to give such training nearly so well. The modern endeavour to correct this by fixing on certain types for minute study has not proved very useful or interesting, and has, I think, detracted from the more judicious middle course which teachers of that wide science might with most advantage pursue. For the mammalian type at least, it may be suggested that the human body is a more useful and more interesting one to set the medical student on than that of the rabbit or the cat. Zoology would no doubt be more intelligently studied after the old first year of anatomy, but that would mean a six-year curriculum, and life is too short.

My view therefore is, that what is valuable in anatomy as a beginning in method of study, and as an aid to zoology, even had it not the professional interest which it so largely has, should be retained and arranged for as a portion of the new first-year studies. Another reason for having such an elementary course of anatomy in the first year, is, to enable the student to enter more intelligently on the study of physiology in the second winter. I am aware that in some schools the lectures on anatomy are arranged as junior and senior courses, the junior course, attended in the first year, comprising the bones, joints, and muscles, fully. That, however, except in regard to osteology, is not suitable for the beginner under the new system. Hardly anything could be conceived more likely to give such a beginner an aversion to anatomy than to be wearied with the details of the origins of muscles and the attachments of ligaments. He could not and ought not to try to follow such teaching. If the beginner under the new system is to attend anatomy at all with advantage in his science year, it must be on a course specially adapted for him.

It may be freely admitted that there has been too much lecturing in anatomy, as in other subjects. The system that I inherited was that of the student attending two lectures a-day, on five days a-week ; one on systematic anatomy, the other mostly on regional anatomy, called the demonstration ; both attended by first and second year students assembled together. That was in addition to plenty of fairly-well done dissecting-room work. My practice for many years has been to develop the carefulness of the dissecting-room work, with study of the dissections ; and, as to the lecture-room, to give in the one hour what I considered suitable for lecture-room treatment ; and in the second hour, abandoning the lecture method, to take the first and second year students on alternate days for demonstrative examination on dissections of the parts under consideration in lecture on the two previous days. The student was called down—not in alphabetical order, so that all were liable—and standing beside me was examined on the dissections, each for some ten minutes at a time, in the presence of his fellows, and values were given to his appearances, these values mainly determining the honours of the class. That I soon saw to be a much more useful though less showy way of occupying the hour. It ascertained progress, stimulated work, gave an opportunity for explanations, and enabled the honours of the class to be given on genuine knowledge, not on the verbal knowledge ascertained by written examinations, of which I held only one, and to which I came to attach little importance especially in the case of first-year students. Although the ordeal was at first somewhat trying, the students soon came to like it, except the few idlers, who were soon disposed of in the presence of their fellows. Attendance at these demonstrative examinations was compulsory.

I submit to teachers of anatomy, and, indeed, to all professors and lecturers, that some such system is preferable to the present daily lecture system. That a more reasonable system would be, an eclectic lecture twice or thrice a-week, with oral and practical examination on the alternate days, avoiding in the lecture-room those details which can be studied with advantage only in the dissecting-room or in the laboratories. My ideal for anatomy in the new five-year system would be, (1.) An elementary course for beginners, in the winter session, specially adapted for them, to include what I have specified above, and not to occupy more of their time than one hour a-day for all its parts. (2.) For second-year students, in the lecture-room, the curriculum course, in which the lecturer eclectically keeps to the greater things of anatomy, speaking both as medical man and as morphologist in his commentary on the parts; leaving mere details to their rightful place, the dissecting-room. It is easy to draw the line between what are great things and what are mere details; some small things are not details, and the particulars of some big enough things belong to the dissecting-room. The bones, having been studied in the elementary course, would not require to come in again except in their relation to the joints and muscles. I feel sure that all that is suitable for the lecture-room can be given satisfactorily in one such course, and that with such a standard, inspiring the student instead of wearying him, we should hear less than we sometimes do of "the dry details of anatomy." It is not a good arrangement to have first and second year students at the same lecture in anatomy, or in any subject. It would be better to avoid the present ambiguous use of the term "demonstrations," and to confine it to the teaching in the dissecting-room. All lectures on anatomy, it is to be hoped, partake of that nature, and the term has been used as an excuse for another course of lectures. I see no occasion for more lecture-room teaching to the assembled class than the elementary course and the subsequent course above indicated.

(3.) In the new five-year course, there will be dissection during the second and third years. Dissection has always in my experience, in student days and since, been pretty carefully done and well appreciated in Scotland. More might, perhaps, be done by insisting on great care in dissection, but a good deal more, I think, by seeing that the student studies his dissection well, with a good text-book on the regional method, such as that of Ellis, not with one of the grinding manuals in too common use; and by the demonstrators ascertaining, by examination on the part, that the student knows it well before allowing him to break further ground. What I had to complain of, for some years back, was that the student had not sufficient time for dissection, owing to the multiplication of classes. He had run in from some lecture, and, in the middle of his work, the college bell called him off to some other lecture. To get a second hour for dissection he would frequently sacrifice the hospital visit. Yet it is the first duty of a school to set aside sufficient time for dissection and for the hospital. The recent fashion of having dissections put up in basins, a fashion, I believe, imported from the London schools, is a poor substitute for dissection; showy but delusive, little better than the study of coloured plates.

I would press the foregoing considerations on the attention of our teachers of anatomy, not only in the interest of the student, but in that of the status of the science. The course of anatomy is in danger of undergoing the proverbial fall between two stools. If there is to be simply a course addressed, as hitherto, to students giving a large part of their time to anatomy, the first-year student will not come to it, and the school will have failed in its duty to him. If it is said, let him come and pick up what he can, he will be disheartened and will learn the bad habit of not listening to what is going on. If it is to be a course adapted to the new kind of beginner, the course of anatomy will make a great fall from the high status it has long held in our Scottish Schools

Imagine the Monros, Barclay (the inspirer of Owen), Charles Bell, John Goodsir, Allen Thomson, not to mention living men, reduced to pitching the standard of their course of anatomy on that level! Or, if the class is a mixed one, the course will not be satisfactory either to teacher or student. No one will suspect me of desiring to lessen the importance of the fundamental subject of anatomy, in any of its branches or by all its methods, but I submit that there is reason why our teachers of anatomy should seriously reconsider their teaching arrangements, and, at the same time, consider whether, on the whole, there should not be less of it in the lecture-room and a larger proportion of it in the dissecting-room.

With reference to the studies of the new first year, I would like to add the remark, I trust without offence, in regard to the subjects of zoology and botany, that these subjects have been pressed too far into detail in the medical curriculum of our Universities. Enthusiastic professors (and one is glad to think that professors are enthusiastic) require to be reminded of the doubt as to whether these subjects should be admitted within the medical curriculum at all. The science of zoology especially has in recent times become of vast extent since the anatomical method has been minutely applied in the study of animal forms. Much of that, and much of modern botany, may be very well in teaching and examination for a degree in pure science, but is unreasonable in relation to the medical student. The subjects of botany and zoology are either delightful studies or vexatious burdens to him, according to the spirit and method in which they are taught and the extent to which the examination is carried, and I do not see why it should not be the former. Their new designation in the University Ordinances for graduation in medicine—"Elementary Botany" and "Elementary Zoology"—is a significant hint in this direction. I venture to suggest to Professors of zoology and botany that a course embracing three lectures a-week, breaking up the class on the alternate days into groups for laboratory work and museum demonstration, with recommendation to the student to make frequent use of the museums, would prove a satisfactory system.

In arranging the order in which these subjects may be taken, two and two, for study and examination, no difficulty need arise from the circumstance that some students begin with the winter, some with the summer session. The most convenient grouping will, I believe, be found to be, not the two physical subjects together and the two biological subjects together, but physics with botany in summer, followed by the examination in them, and the chemistry and zoology in winter, followed by the examination in them. There are various reasons for adopting this grouping. The course of natural philosophy in the Arts curriculum is not suitable for the medical student. What is wanted is a course of experimental physics, and as it is desirable that this should be given by the professor himself with all the resources of his laboratory, that means that it will have to be in the summer session. Nor is that to be regretted, for zoology and botany together are rather a heavy undertaking in three months for a beginner to whom biological study is entirely new. By taking zoology in winter it will be assisted by the concurrent course of elementary anatomy, and, being a three months' course, there is time for further study in the zoological museum. The course of practical chemistry fits in during the last half of the winter session.

But let it be constantly borne in mind that if these auxiliary subjects are pressed too far into detail, there is considerable risk that the studies of the first year may run over into the second year. It may tend to moderate the over-enthusiasm of teachers, and the not always quite judicious expectations of examiners in these subjects, to know that, when the General Medical Council was about to come to its conclusions in regard to the course of medical study, it was a question whether these auxiliary sciences should not rather be placed in the general preliminary examination prior to registration, to be followed by a four-year course of professional study proper. In deciding for the alternative system of a five-year course, bringing these science subjects into the first year, we were determined by the considerations that the teaching would be more practical and the examination more reliable, but the Council was careful to express the view that it intended these studies to be concluded with the first year.

It may help to remove any prejudice against these views as to the method of commencing and conducting medical education under our new five-year system, to refer briefly to the system in operation in France, a country from which, with our insular prejudices and old customs, we have much to learn in regard to medical education. It will be seen how fully the system in France recognises the value of laboratory and hospital work as the prime consideration. Due time is set aside for hospital and laboratory work in all the subjects; no lectures are allowed before one o'clock. The first year is devoted to physics, chemistry, and biology, and if the student does not pass in these subjects by the end of the first year he goes back, and is not allowed to begin anatomy and hospital attendance till he has passed in these subjects. Lectures are not oftener than thrice a-week in any subject, and attendance on them is voluntary, but attendance on the laboratory courses and on hospital is compulsory and is carefully ascertained. Professors are remunerated by salary, as, happily, they are now to be in Scotland.

Our Scottish Universities have, unfortunately, been hampered by ordinances made thirty years ago, requiring an excessive lecturing system. From this they are now freed. Each University is now at liberty to arrange, by consultation between its teachers and the governing body, what the number of lectures in each course is to be. The General Medical Council recommend that lectures should not be oftener than thrice a-week in any course, that due time should be set aside for practical work, and define a practical course to mean work done by the student himself under the direction of a qualified teacher. All that is a shock to those who have been reared under the present over-lecturing system and have themselves practised it. The change must begin with a different conception of the province of lectures in modern medical education. Its modern phase with us, though not all of us, is worse than the old one, the endeavour to supersede the printing-press by voluminous note-taking. The student, knowing no better, may like it, but ask him what he thinks of it after he has graduated. The aim of the lecture should be something very different from grinding, to give it its plain though undignified name; the man in the lecture-room should come before his audience as a master in his subject, as a commentator, and, according to the subject, more or less as demonstrator or experimenter, not as a reciter of what may be found in the commonest text-books. He should leave to the books what books properly can do, and endeavour to do for his students that which books cannot do; relegating to the laboratory and the bedside that which can only there be really done.

What is now wanted in teaching is more laboratory work with plenty of demonstrators, and more bedside work, with time for private study. To these essentials, which should be first provided for, may be added, in any time that may remain, two or three lectures a-week, if by a professor or lecturer who is an authority in his subject. And what is wanted in examinations, is a method that shall be the test of such teaching, with very much less dependence on the written part of the examination. It will be interesting to see which of our Universities will take the lead in introducing these inevitable reforms.—I am, Sir, yours, etc., JOHN STRUTHERS.

EDINBURGH, *September* 1893.

Part First.

ORIGINAL COMMUNICATIONS.

I.—THE DISORDERS OF SPEECH.

By JOHN WYLLIE, M.D., F.R.C.P. Ed., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh; Lecturer on Medicine in the Edinburgh School.

(*Continued from page* 344.)

MOTOR APHASIA (APHEMIA)—*Continued.*

2. EFFECTS UPON THE PRODUCTION OF WRITING.—The striking interference with the power of writing that in most cases of motor aphasia co-exists with the disablement of speech attracted the attention of students of aphasia almost from the first.

Trousseau, in his splendid chapter on Aphasia,[1] expresses himself very clearly on this subject. He says,—"The greater number of aphasics are paralysed in the right hand and cannot write; and if they acquire the habit of writing with the left hand, it is easy to see that they cannot trace, in writing, many more words than they can express in speech." He illustrates this proposition by citing a number of cases; among others that of a patient who had only two words in his vocabulary, viz., *oui* and *maman*, and who could only write one word, viz., his own name. When asked to write any word, he always wrote his own name; and he did so even when he was asked to write *oui* or *maman.*

Gairdner,[2] in 1867, expresses similar views. He says,—"Notwithstanding some noteworthy exceptions (to appearance) in which aphasic individuals are said, on rather good authority, to have been capable of expressing their thoughts in writing, the usual fact is certainly the opposite,—the aphasic writes at least as badly as he speaks; and when he speaks not at all, he writes not at all."

It is in this paper that Gairdner directs attention to that remarkable phenomenon exhibited in the writing of aphasics, the "intoxication" of the brain with a letter. He gives facsimiles of the handwriting of several of his patients, which show admirably how, when the patient tries to write a word—his name, for example, —some letter in it is apt to be repeated over and over again, as if the patient could not get the image of it to retire from his mind.

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[1] *Clinique Médicale*, p. 708.

[2] *Proc. of the Phil. Soc. of Glasgow*, 1865–68, p. 104.

When, at a later period, the centres for the visual and graphic-motor images of words in the brain had been differentiated, it was suggested that the troubles of aphasics in writing might be accounted for by supposing that the lesion in Broca's convolution extended into the posterior extremity of the second frontal convolution, and thus involved the centre for writing. We shall by and by have to consider what effect upon writing a lesion so situated may produce. In the meantime it may be remarked that opinion is coming round to the older view of Trousseau and Gairdner, according to which this disablement of the power of writing is one of the common, almost constant, results of motor aphasia. Dejerine thus concludes a recent valuable contribution to the "Study of the Troubles of Writing in Aphasics:"[1] —"Thus in proportion as we advance in the study of agraphia we find that Trousseau was right, when, speaking in his celebrated cliniques upon aphasia, of the troubles of writing in aphasics, he said, having in view certainly only the cortical motor aphasics, the only kind known at his epoch, 'Usually the aphasic is not more able to express his thoughts in speech than in writing; and, although he has retained the movements of his hands and can employ them with as much intelligence as formerly, he is as incapable of composing a word with the pen as he is of composing it for its purpose of speech.'"[2]

Rosenstein's case already quoted (Case III.), shows conclusively that a lesion strictly limited to the third frontal convolution may be as destructive to the power of writing as it is to that of speech.

It is universally admitted, however, that there are exceptional cases, in which patients, presenting typically the symptoms of motor aphasia in their spoken speech, can yet express themselves correctly in writing,—thus showing that they have mentally little or no amnesia verbalis. It is generally believed that in these cases the lesion is not cortical, but sub-cortical; and that it is so situated as to cut across the pathways leading to the organs of phonation and articulation, whilst it leaves intact the pathways connecting the motor speech-centre with the centres for writing. Gowers (p. 106) gives a diagram illustrating this possibility.

But, granting that the majority of these cases may thus be referred to the category of cases due to sub-cortical lesion, I think it far from certain that this exceptional retention of the power of writing is always to be so explained. There is, for example, Dr Wm. Ogle's case (Case IV.), in which the foot of the third frontal convolution was almost wholly destroyed, and yet the patient could, in writing, express himself pretty correctly, though he was otherwise typically aphasic. Is it not possible that that patient was markedly *auditif*, and that his vivid auditory word-images were in themselves sufficiently potent to call up the equivalent visual and motor images in the writing centres? I do not see how the patient's retention of the power of writing can be otherwise explained. And then, again,—always supposing the guiding psycho-motor images for oral speech to be specially stored in the foot of the third frontal convolution,—is it not possible that, in a case in which this convolution has escaped while the feet of the ascending frontal and ascending parietal have been destroyed, the word-images formed in the foot of the third frontal are capable of acting upon the centres for written speech, while no longer susceptible of being *orally* exteriorised or executed, owing to the destruction of the motor executive cells? I shall presently, in connexion with the treatment of motor aphasia, make a note of a case of my own, in which writing was retained, and in which I was inclined to attribute the destruction of oral speech to a lesion so situated. When future clinical and pathological observation and experimental research have successfully analysed the functions of the various parts of Broca's convolution, we shall have clearer views upon such questions as these two.

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[1] *Comptes Rendus des Séances de la Société de Biologie*, July 1891.

[2] *Clin. Méd.*, p. 718.

Effects upon the Reception and Interpretation of Speech.

1. AUDIBLE SPEECH.—The fact that, in motor aphasia, the reception and interpretation of audible speech are little, if at all, interfered with, has already been abundantly illustrated. The auditory word-images, revived from without by speech that is heard, are quite capable of calling up the meanings of words in the mind without assistance from the companion motor images. There is practically, therefore, no word-deafness in motor aphasia.

Yet it is highly probable that in the healthy brain, when the auditory images are strongly revived from without, the motor images are also, though perhaps faintly, revived along with them.[1] Has this revival of the motor image no value in assisting the auditory image to call up the meaning? I do not think this question has ever been carefully considered by students of aphasia. My own impression is that the motor images have a certain slight value in this respect. To put the matter to proof, patients with motor aphasia should be tested with the words which are known to be the least deeply imprinted, viz., the names of concrete things. My own method is to ask the aphasic patient to touch, in succession, as I name each part, his *nose*, his *ear*, his *chin*, etc.; and my belief is that in a large proportion of cases of motor aphasia the patient fails to interpret some of these names, or has a difficulty in interpreting them, which he shows by hesitating and considering before he touches the part. I have had no autopsy on any one of the cases which exhibited this phenomenon, so that I cannot say for certain that there was in them no element of auditory aphasia; but I may say that I regarded the cases as cases of pure motor aphasia. The point, I think, deserves attention.

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[1] Bain says.—"While intently listening to a speech, we are liable to follow the speaker with a suppressed articulation of our own, whereby we take the train of words into a vocal embrace, as well as receive it passively on the sense of hearing. This is an instance of concurring or compound association."—*Senses and Intellect*, 3rd ed., 1868, p. 353.

2. Visible Speech, Written and Printed.—Although, in motor aphasia, the reception and interpretation of audible speech are little, if at all, interfered with, the reception and interpretation of speech that is written or printed are interfered with, as a rule, in a marked degree. This loss of the power of reading (Alexia) is not so absolute as it is in a case of true word-blindness, due to the destruction of the visual images at C (Fig. 2); nevertheless, as a rule, it is very marked. It early attracted the attention of Trousseau, who quotes many instances in illustration of it. In some of these cases there seems to have been an element of what is now termed sensory aphasia, but others appear to have been cases of aphasia purely motor. Of these latter, perhaps the best is the celebrated case of the patient who could only speak one word, viz., the meaningless recurring utterance *Cousisi*, and who could only write one word, his own name, Paquet. "We ask him his name, 'Cousisi;' we pray him to write it, he writes 'Paquet.' We ask then him to write his address, he writes again 'Paquet;' then, perceiving that he has made a mistake, he turns his head with an air of impatience, saying 'Cousisi.'" This patient, who had been a well-educated man, occupied himself much with reading. "He reads sometimes all day, and I am bound to admit that he follows the lines sufficiently well, that he turns the pages at the right time, and that he *seems* to understand what he reads; but by a little experiment one can prove quite clearly that he really understands much less than he seems to do. I take the book and read aloud the bottom of a page, and I tell him to follow with his eyes, and turn the page when I come to the end of it; he never does it at the right moment." He had in his possession a number of little printed romances, such as one might read and throw aside, as one disposes of a daily newspaper. Trousseau remarks that it would be an intolerable punishment to any ordinary person to be forced to read these stories over and over again. But this patient did so voluntarily. "He reads; he reads again; he reads always with the same attention." One of the explanations suggested is, that he understands imperfectly, and does not remember well, what he reads.

I think most physicians who have watched cases of motor aphasia with care will agree that, in the vast majority, there is an interference with the power of reading, such as is illustrated by this case of Trousseau's. Sometimes it is greater and sometimes less; in almost all cases it is distinctly present. It is therefore the more surprising to find that Lichtheim[1] thinks that in pure cases of motor aphasia the power of understanding written and printed words is intact. Lichtheim says,—"According to the diagram, the power of reading aloud should be lost, but that of silent reading preserved intact. I am sure that in uncomplicated cases this must be so, but I much regret that I have not had a case to observe during the last few years. . . . It has been often specified [in literature] that the faculty of reading was intact; on the other hand, Trousseau has shown that many aphasics appear eager in their reading and yet do not understand what they read. . . . I shall return to this point, and show by personal observations how I think this contradiction may be explained." At page 468 he says,—"These cases appear to me to have been instances of total aphasia [combined sensory and motor aphasia] in which the symptom of word-deafness has already been recovered from," but in which the remains of the lesion on the sensory side are sufficient to interfere with the perfectly free transit of incoming speech to the mind.

But, in motor aphasia, more or less interference with the power of reading is so exceedingly common—almost constant—that I do not think it can be always explained in this way. An explanation that appears more generally applicable may be founded upon—(1), the suggestion of Professor Bain[2] that the motor images have a certain value in connexion even with the reception and interpretation of speech; and (2), the fact emphasized by Ferrier, that there is in educated people an exceedingly close relationship between the visual images of letters at C and their motor articulative images at B,—a relation almost as intimate as is the relation of these motor images at B with the auditory images at A. Ferrier (p. 441) says, "Here the articulatory or motor element is the central point of two sensory cohesions,—the one auditory, the other visual,—which two are regarded as equivalent." If the visual images of letters are more intimately associated with the motor images at B than with the auditory at A, it necessarily results that the destruction of the motor images at B will in every case of motor aphasia cause serious interference with the power of reading; because the visual images at C can only revive the meaning by acting upon it through the images of the primary couple, and the destruction of B breaks one of the connecting links.

Effects upon the power of Repeating or Echoing Spoken Speech, and upon that of Copying Written Speech.

When motor aphasia is complete, the power of repeating or echoing spoken words is of course destroyed as completely as is the power of volitional or spontaneous utterance. In both cases, the power of utterance would be lost permanently were it not for the Further Education of the convolution on the opposite side of the brain, which convolution, as we have seen, may gradually acquire articulative power. I think it is worthy of note, at this point, that the acquisition of articulative power by the previously uneducated centre is furthered if the patient is made to attempt the repetition or echoing of words and letter-sounds spoken to him. But I shall have something to say specially about the education of these cases presently.

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[1] *Brain*, 1884.

[2] See footnote, page 387.

As to *copying of written or printed words*, it is not materially interfered with in motor aphasia. If, owing to paralysis, the patient cannot copy with the right hand, he can do so with his left. It is generally found that he has no difficulty in translating printed into written characters. The contrast between what he has written from copy and what he has written spontaneously is often remarkable. Thus a patient of my own, when asked to write, to my dictation, the words "yesterday at Ayr Police Court," wrote "Glamen a dug gu Puegen Tued Gow Mgu," but when shown the words in print he copied them in writing very legibly. This patient was not, in the proper sense of the term, "word-blind." He could give some account, though an incorrect one, of the meaning of any sentence in a newspaper that I asked him to read.

Other Phenomena occasionally associated with Motor Aphasia.

1. I have already, in a former paper, made a note of the occasional occurrence of Amimia and of Paramimia in connexion with motor aphasia. In Amimia, the patient has lost the power of using such simple pantomimic signs as nodding the head to indicate the affirmative. In Paramimia, he misuses these signs; shaking the head, perhaps, instead of nodding it, when he wishes to indicate the affirmative. It is usually in severe cases of motor aphasia that amimia and paramimia are found as associated symptoms. They generally pass off quickly when the patient begins to improve. In the great majority of cases of motor aphasia there is no impairment of this power of pantomimic expression; often the patient is, in this way, able to express himself with striking vivacity.

2. Another symptom occasionally exhibited by severe cases of motor aphasia is an *inability to protrude the tongue by effort of the will.* Most aphasic patients are quite able to protrude the tongue, and to move it about freely in all directions. But in a few cases the patient is unable to protrude the tongue by effort of the will; and yet he may be able to protrude it instinctively and involuntarily. Among the recorded cases of patients unable to protrude the tongue voluntarily, there is one in which the patient protruded it involuntarily in the act of licking his lips as a preparation for the effort to protrude it voluntarily; and another in which the patient protruded the tongue instinctively when a sweet lozenge was being carried to his mouth.

Treatment of Motor Aphasia.

In training a patient with motor aphasia to speak, it is often of advantage to him to pronounce simple words in his hearing and ask him to repeat them. It is largely by practice in such repetition of words heard that the patient, in so many cases, re-acquires the power of speech. He educates in this way the previously uneducated centre. But I think the process may be expedited if it is conducted on scientific principles. It should be remembered that the patient has lost the power of uttering even the simple letter-sounds. If he can be got to master the letter-sounds in the first instance, it will be more possible for him, afterwards, to produce their combinations in the form of words. It happens that I have had lately under treatment a case of motor aphasia in which the education of the patient after this manner was remarkably effective in restoring to him his power of speech. Nowadays it is scarcely worth while to publish any case of aphasia that does not include a record of the morbid changes in the brain. But I make an exception in this case, not only because of its bearings on the treatment of motor aphasia, but also because the case is one of that comparatively rare variety in which the patient, utterly aphasic as to spoken speech, is yet capable of expressing himself well in writing.

CASE VII. (Personal Observation.) *Motor Aphasia with Retention of the Power of Writing. Method of Education resorted to in restoring Spoken Speech.*—Patrick Keaney, æt. 25, single, a stoker on the railway, recently returned from America; admitted to Ward 31 on 10th September 1892.

Complaints.—Loss of speech. Loss of power in right arm and leg. Disease of the mitral valve of heart.

History.—The patient, who is a respectable and fairly well educated young man, states that he never had rheumatic fever or any illness attended with pain about the region of his heart. Up to the beginning of his present illness he always enjoyed good health, but for the last five years he has noticed that he has easily got out of breath on exertion, and that on such occasions he has had palpitation of the heart.

In 1889, the patient, in company with a fellow workman, his cousin, emigrated to America. They settled in Pittsburg, where Patrick got employment on the railway as a stoker. He had long hours, and got his meals very irregularly.

On the 13th of May 1892, he came home from work feeling very tired, and went as usual to the restaurant, about fifteen yards from his own lodgings, to get his supper. He was taking a cup of tea, when, on raising his cup for the third or fourth time, he suddenly found that the power was leaving his arm, and that he could not raise the cup to his mouth. Alarmed at this, he rose, paid his reckoning, said good-night to the landlady, and went to his lodgings. His cousin (who has returned with him from America) states that when Patrick entered the room at the lodgings it was evident that there was something seriously wrong. He did not seem to know what he was doing; he could not speak a word; and he was sweating profusely. Yet he did not appear to be lame in walking. He at once went to bed, and in doing so, was able to undress himself. In a few minutes thereafter he became unconscious, and in this condition he remained all night, tossing about restlessly in his sleep. When, in his sleep, he tried to raise himself in bed, it was noticed that he was powerless on the right side. In the morning, when he awoke, it was found that he was totally paralysed on the right side and totally speechless. He was removed to the Pittsburg hospital, where he was carefully tended for thirteen weeks. The cousin states that for the five first days he did not recognise his friends; but the patient himself says that this is a mistake.

The patient states that in about four weeks after the beginning of his illness he had to some extent recovered power in the right leg, so that he could stand without assistance, and could walk a little, if, in doing so, he supported his right shoulder against a wall. About this time, also, he acquired the power of saying *yes* and *no* in answer to questions, always using these words appropriately. After this time, steady improvement continued in the leg; but it was not till over three months after the date of the seizure, when he was at sea, on his voyage home, that he observed any return of power in the arm. He then began to move his shoulder, and in a less degree to flex and extend his elbow joint; but no power of movement has even yet been restored to his wrist joint, and only very slight power of flexion has returned to the joints of the fingers.

About six weeks after the date of the seizure (two weeks after he first began to say *yes* and *no*), the patient for the first time replied to a question in writing; using his left hand in doing so. He was asked, "How are you?" and replied in writing, "Well, I no feel so bad." After this, he replied to questions in writing almost every day; and he states that he never from the first had any difficulty in calling up in his mind the words that he wished to write, although, naturally, he found it somewhat difficult to write with his left hand.

On 15th August, he sailed from New York, in company with his cousin; and in due time he arrived in this country, and was admitted to the Royal Infirmary.

On his admission (10th September), it was found that only a slight trace of lameness remained in the right leg. The arm, however, was seriously paralysed. He could move his shoulder joint freely, being able to raise the arm over his head. He could also flex and extend the elbow joint, but he did so feebly. The wrist joint he could neither flex nor extend in the slightest degree. In the fingers, which he kept habitually semiflexed, there was very slight power of voluntary flexion, but none whatever of extension. The mouth was drawn very slightly to the left side, and the tongue, when protruded, deviated very slightly to the right.

The heart was much hypertrophied, and there were well-marked bruits of mitral obstruction and regurgitation.

From the notes of the case, which have been taken with great care by my former house-physician, Dr W. F. Robertson, I extract a few of the leading particulars regarding the patient's speech.

On his admission, almost the only words which the patient could articulate correctly were *yes* and *no;* but he made attempts to articulate many other words, and it was strikingly noticeable that he always produced sounds distinctly articulated, never an inarticulate slur. Thus, ten days after admission, when he was already beginning to improve, he said, in reply to questions, "Pittsburd" for Pittsburg, "Cáseno" for Glasgow, "Tunnes" for Stirling, "Skennes" for September, "Toosday" for Tuesday, "Much-a-day" for Wednesday. When asked what he had had for tea he said "Ped" for bread, "Butter" correctly, and "Tea" correctly.

When he was tested with the Physiological Alphabet, it was found that he had lost the power of producing the greater number of the Consonant sounds. With regard to the vowels, whilst he could always produce the middle vowel-sounds Ah and Oh, he had difficulty with the vowels at the two ends of the list, often converting the vowel-sound *ee* into eh, and *oo* into oh.

Here is a note of his articulation of the various consonant sounds of the Physiological Alphabet.

Labials—*P*, as in Papa, is given correctly. *B* in Baba sometimes correct, sometimes as P, patient saying "Paba." *M* correct. *W* as wh, *wee wee* being given as "whey whey."

Labio-Dentals.—*F* generally given as P. *V* generally as F.

Linguo-Dentals.—*Th*^{1} as F or H. *Th*^{2} as N, D, V, or F. *S* as F. *Z* as F.

Anterior Linguo-Palatals.—*Sh* as F. *T* correct. *D* as T. *N* correct. *L* sometimes correct, but sometimes as D or T or N. *R* occasionally correct, but generally as N, T, D, or Wh.

Posterior Linguo-Palatals.—*K* sometimes correct, but sometimes as T. *G* always as K. *Ng*—as in aing—sometimes as N, sometimes as S. *H* sometimes correct, sometimes as Y. *Y* sometimes correct, sometimes as Wh.

It should be noted that in testing the patient's power of articulating those various letter-sounds, simple syllables were used, such as in Papa for P, in Mama for M, etc.

In singular contrast with the patient's difficulty of articulation, was his comparative facility of expressing himself in writing. The right hand being paralysed, he used his left. Even in his writing, however, distinct deterioration was observable. We were allowed to inspect several of the letters that he had sent home to his father from America before his illness; and in them, although he makes a misspelling now and then, and writes the first personal pronoun with a small i, he expresses himself with exceptional intelligence and in creditable English. The deterioration was shown most markedly in the written account of himself which, at my request, he gave us a few days after admission. In this account, there are, besides misspellings, frequent omissions of words, and some insertions of superfluous words. He begins the account as follows:—

"Patrick Keaney is was in born in the city Stirly [Stirling] in the year 1867 i worked at varous kinds jobs principally woods i made my mind to go to America i sailed in Aucor-liner Ethopa to youngstown when i went to work in the rolling mills then i went Pittsburg where got work as a fireman to a engine," etc.

Patient could read a book silently, though unable to pronounce the words; but in doing so he easily became fatigued, getting headache and a feeling of confusion in his head. He also easily forgot what he had just read.

One of the chief points of interest in the case was the singularly rapid progress the patient made, under tuition, in the re-acquirement of articulate speech. I think no case could have more clearly demonstrated the utility of the Physiological Alphabet as a means of tuition. We did not trouble the patient with the *names* of the letters, but taught him from the beginning the *letter-sounds* of the physiological alphabet. In doing so, we adopted what may be called the "Mother's Method." Beginning with the Labials, we taught him to say *papa*, *apap*, *appa*, thus giving him the consonant *P* as an initial, a terminal, and a mid-letter. Then we taught him to say *baba*, *abab*, *abba;* then *mama*, *amam*, *amma;* then *wee wee;* and so on throughout the alphabet. He was shown by "lip-reading" how to place the lips, tongue, etc., for the pronunciation of each letter-sound. Being an intelligent and diligent pupil, he soon was able to go over the whole of the letter-sounds in this triple fashion, from one end of the alphabet to the other, by heart, without looking at the paper. We then supplied him with the children's books known as the "Little Primer" and the "Little Reader;" and often, afterwards, we would find him in the side-room by himself, carefully reading aloud from his primer such little sentences as "I have a cat," "he has a dog," etc. At the beginning of January 1893, when he left the Infirmary, he could say anything he wished to say, almost without a mistake in articulation; although he still spoke carefully, slowly, and word by word,—in *staccato* fashion. His writing and spelling had also greatly improved. When I last saw him—July 26th, 1893—there was still something of this character in his speech, but the patient had made much progress since leaving the Infirmary in January.

I asked the patient whether at any time since the seizure he had ever experienced difficulty in forming words in his mind. I asked him to consider this question carefully, and reply to it in writing. Here is his reply, dated December 3rd, 1892:—"With regard to my forming words in my mind, i could always form them in my mind but trouble was in getting them out i could not get them out at all and after makeing all the signs i could think of to my friends if they could not understand me i would have to take paper and a pencil and write it down for them."

On October 17th, he wrote, "when i came in here i could only say yes and no that was all i could say, but now i could say very neare any thing if i could take time."

It is not my intention to enter into any discussion as to the probable nature of the cerebral lesion in this case. From the facts stated, the reader can form his own theory; but I may say that my own impression is that the cause of the paralysis and aphasia was probably embolism in a branch of the Sylvian artery. It is one of those exceptional cases of motor aphasia in which the patient retains the power of expressing his thoughts in writing, there being little or none of that amnesia verbalis which is usually associated with motor aphasia. The patient could call up words in his mind quite easily, only he could not articulate them. How was it that the power of calling up words in the mind was retained? We have already seen that the retention of this power may possibly be explained on any one of three hypotheses:—(1.) The lesion in Broca's area may have been a sub-cortical one, leaving the grey matter of the cortex unaffected, and cutting across only the motor tract for spoken speech. (2.) The areas *b* and *c d* may have been destroyed, whilst the area *a*, in the foot of the third frontal, was left intact. (3.) The whole of Broca's area may have been destroyed, but the patient, if strongly *auditif*, may have been able to recall the words by reviving their vivid auditory images. I leave the reader to take his choice of any one of these three hypotheses. For my own part, I am inclined to prefer the second. If the lesion was of embolic origin, it was almost certainly cortical; and if cortical, it evidently extended into the motor regions *b* and *c d*, the centres of the articulative organs, because the face was slightly pulled to one side, and the tongue, when protruded, deviated slightly towards the side paralysed. In the present state of our knowledge of the functions of the various parts of Broca's area, we can form no very distinct opinion; but I am inclined to think that the motor images or pictures, presumably stored at *a*, in the foot of the third frontal, were intact, but could not be exteriorised or executed on account of the destruction of the executive cells at *b* and *c d*. The re-education of the patient perhaps enabled him to execute them by means of the executive area in the convolutions of the opposite side.

It should be noted that, in this case, the absence of amnesia verbalis made the education of the patient exceptionally easy.

There is, indeed, every reason to believe that the patient's own efforts at articulation would naturally, in the course of a year or two, have led to restoration of speech. But no one who watched the case from day to day could doubt for a moment that the progress of the patient was greatly accelerated by his use of the physiological alphabet. By its aid, he learned in a wonderfully short time to master all the articulate sounds of which speech is composed, and to combine them correctly, so as to articulate the words he could so easily call up in his mind. In relation to the Education of cases of motor aphasia, I think the case of interest; and I offer it as a contribution to that subject.

CONDUCTION APHASIA (the Leitungsaphasie of Wernicke).

Auditory aphasia is, as we have seen, produced by lesion at the auditory centre A, and motor aphasia by lesion at the motor centre B. I now propose to say a few words about the variety of aphasia which results when a lesion is so situated as to cut across the conducting fibres which extend between A and B, and keep these two centres in physiological connexion. In crossing from the first temporal to the Broca's convolution, these fibres must necessarily pass under the floor of the Fissure of Sylvius, and under the Island of Reil. A softening or other lesion in the floor of the Sylvian Fissure, or in the Island of Reil, is therefore very apt to cut them across.

The variety of aphasia which results from such a lesion was first described by Wernicke, in his original paper of 1874.[1] Its peculiarity is that, whilst, on the one hand, there is no word-deafness, and, on the other hand, no asynergic difficulty of articulation—both auditory and motor centres being intact,—there is marked Paraphasia. The patient, in expressing himself, uses wrong words, and especially wrong nouns, because, the connexion between A and B being broken, the motor images are deprived of the important guidance in the choice of words which is normally given to them by the auditory images. Wernicke (*Op. cit.*, p. 26) says, "The patient understands everything, being thus quite unlike a patient suffering from the form of aphasia [the auditory] just described. He can also say everything, but the choice of the right words is disturbed in the same way as it is in the form just described. The sound-image is here indeed intact, and it is also in normal relation with the other sense-images which go to form the percept; but, as the connecting path is interrupted, it cannot throw into the scale its important influence in directing the choice of the motor images." In another important paper, published in 1886,[2] the same observer says, "Conduction aphasia is characterised chiefly by its negative symptoms. Where no sensory and no motor aphasia is present, but where, in speaking, there is Paraphasia, the erroneous use of words, we have got to deal with disturbed conduction between the centres A and B."

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[1] *Der Aphasiche Symptomencomplex*, p. 26.

[2] *Fortschrift der Med.*, 1886, i. p. 377.

One of the best cases of conduction aphasia yet published has been put on record by Lichtheim. I may here insert a brief note of it.

CASE OF CONDUCTION APHASIA (Lichtheim, *Brain*, 1884, p. 445).—A man, aged 46, admitted into hospital at Berne on the 3rd of April 1883. No history of his illness could be obtained. Slight paralysis in right arm and leg and in right side of face. Sensation normal. Understanding of spoken speech and of printed and written speech unaffected. In production of speech, exhibits marked paraphasia. "When asked to relate his history, he strings together, in a fluent manner, numerous words of which scarcely one now and then can be made out. The following were noted: 'Evening, five and twenty, and.' Patient is aware of the incorrectness of his diction, and tries to assist himself with gestures. He succeeds better with short words and answers. Thus in answer to the question, 'What was there for supper?' he answered, 'Bread, meal, potatoes,' with only two mistakes. His own name he mutilates." . . . . "His writing is very imperfect. He mixes up the order of letters in a word; and usually stops after an attempt of short duration."

As to repeating and copying. "When he repeats connected sentences he manifests the same defects as in volitional speech; single words are pretty correctly rendered." . . . . "He can copy what is set before him with absolute correctness."

At the autopsy the chief lesion was a softening with depression in the Island of Reil and the floor of the Sylvian Fissure.

A point brought out in this case is, that besides being present in his volitional speech, the Paraphasia was also present in sentences *repeated* to dictation. The Paragraphia should also be noted; but Lichtheim says that volitional writing was not sufficiently tested.

There seems, on the whole, to be little to distinguish this form of aphasia from a case of auditory aphasia in which the word-deafness has already been recovered from, but the amnesia verbalis and paraphasia persist. The absence of word-deafness *from the beginning*, in conduction aphasia, would seem to be the chief point of difference.

(*To be continued.*)

II.—CASE OF FACIAL NEURALGIA TREATED BY OPERATION.

By A. G. Miller, M.D., F.R.C.S.E., Surgeon to the Edinburgh Royal Infirmary.

(*Extracted from Hospital Notes.*)

W. S., aged 60, married, verger in St Giles' Cathedral. Recommended by Dr Young. Admitted to Ward XVIII. on November 25th, 1890. Complaint, facial neuralgia on right side.

History.—Twenty-five years ago the stump of a molar on the right side of upper jaw began to trouble him, and his cheek became swollen. Fifteen years ago he was wakened one night by a throbbing pain in the temporal region (temporal branch of second division of the fifth nerve). The pain returned at intervals during the night. Next day he took quinine, which relieved the pain. The pain then left him for two years. The next attack was principally in the cheek and face, but extended also to the temporal region (infra-orbital branch of second division and buccal branch of third division in addition to above). The last severe attack began in March 1889, the pain being felt principally under the eye, at the angle of the nose, and also extending down the lower jaw to the mental foramen (inferior dental branch of third division, now affected also). Salicylate of soda relieved the pain for two weeks. He also had the stump on the right side drawn. The pain, however, soon returned, and has troubled the patient constantly for eighteen months. It is most violent in the morning and evening.

Previous Illnesses.—The patient has suffered from sciatica for a number of years.

Mode of Life.—He used to live in a damp house. He is not an abstainer, but drinks moderately. He takes alcohol to relieve the attacks. He was for thirty-five years in the constabulary force, and was exposed to all kinds of weather.

Present State.—Patient's face is flushed; his breath is fœtid. He takes his food well, and complains only of neuralgia. There is a specially painful spot, a little external to the infra-orbital foramen.

Character of Attacks.—The pain is very severe, and of an explosive character, occurring every few minutes, but lasting only for a few seconds. When the paroxysms occur, the pain, which is never quite absent, is greatly aggravated, the facial muscles contract, the eye closes, and the patient involuntarily places his handkerchief on his cheek, while his body is bent forwards into the "cringing" attitude described by Dr Buzzard. The explosion is confined to the nasal and labial branches of the infra-orbital nerve, but there is pain felt more or less constantly, not only in these branches of the second division, but also in the temporal branch, and in the buccal and inferior dental branches of the third division of the fifth nerve. There is also pain sometimes over the parotid region and side of the neck, pointing to involvement of the auriculotemporal branch of the third division.

Operation.—On Friday, November 28th, the patient was chloroformed, and Mr Miller made an incision downwards and outwards over the infra-orbital foramen. The bleeding was stopped, and then Mr Miller dissected down to the foramen, where he found the nerve. Under it he passed a blunt hook, and stretched the nerve. At the tender spot referred to above, the periosteum was raised and the bone was found to be rough and the periosteum somewhat adherent. The wound was then sewed up and dressed with Friar's balsam.

The patient was sick after operation. Early in the afternoon the explosive pains returned—severe. Towards 9·30 P.M. they disappeared, and the patient slept till 5 A.M. He dosed off and on all Saturday morning, having no pain. About 5 P.M. he had some severe attacks. The pain now is not so widespread as before, being limited almost entirely to the place where incision was made. The pain begins at infra-orbital foramen. Sensibility to touch normal on both sides.

Nov. 30.—Pains less severe, with longer intervals between. Numbness over right lip. Patient says that he can now read without spectacles. There seems to be a slight drooping of the angle of the mouth, probably due to section of levator anguli oris at operation.

Dec. 1.—Patient passed a good night, free from pain. Afterwards he had severe pain, but less severe than before operation. Numbness in right lip passing off. The patient left the Infirmary to-day, free from pain.

Dec. 5.—Patient returned to have the wound dressed, as a slight discharge was coming from the lower edge of the wound. Dressed with a gauze drain and boracic powder. He says he has been feeling wonderfully well, and has not slept so peacefully for years. There is slight pain at the wound.

Dec. 9.—Dressed daily; doing well; the redness in the wound is fading.

Dec. 16.—Complains of numbness in the right upper lip. Pain has on one or two occasions been severe, but not so severe as previous to operation, quinine, 5 grs. t.i.d., being taken internally.

Patient returned at intervals of seven or eight days to report progress. Chief trouble now seems to be dyspepsia. The pain in the face is almost *nil.*

Readmitted January 22nd, 1891.

History.—After patient left hospital on December 1st, 1890, the pain never went thoroughly away. He felt twinges of pain in the mornings, but generally it went off during the day and night. He was sometimes without pain for a day and night on end. As a rule, it was away for about nine hours at a time. About five weeks ago the pain became very bad in the morning, and sometimes continued all day. This state of matters continued till the present time. He always feels better in the open air. Patient was much depressed on account of the pain returning, and was anxious to have a more radical operation performed. Accordingly, on January 23rd Mr Miller made an incision about an inch and a half long and a little below the orbit and parallel to it, and another at right angles to the first, about an inch long. He found the infra-orbital foramen, and with a gouge and mallet made an opening into the antrum a little below the foramen, without cutting the mucous lining. He opened up the infra-orbital canal from the antrum. As he was pulling on the nerve, a piece about 2 inches long broke off, the nerve having been much softened by the previous operation of stretching. He then cauterized the stump of the nerve with a wire, syringed out the cavity and stitched the wound, and put in a drain-tube. There was a good deal of bleeding. The operation lasted over an hour. Patient took the chloroform quietly, and was only slightly sick afterwards. Still having twinging pains in the old place.

Jan. 24.—He was sick about midnight, but after getting a hypodermic of morphia he slept soundly. He took breakfast all right this morning. He still has twinges of the old pain.

Jan. 26.—Patient had pain during the night, but after having beef-tea he slept. He has twinges along the upper lip and side of nose. When he shuts both eyes he seems to see bands of colour, dark and shaded. Pain worse at night.

Jan. 26.—Pain stays away for a longer period now. Wound was dressed, and some of the stitches removed.

Jan. 27.—Wound dressed, and the remaining stitches removed. Tube removed. Wound healing favourably. Patient still has pain at side of nose. Side of face and lip are numb. Pain is of a milder form now.

Jan. 28.—Patient had rather a restless night, but feels all right when out of bed. Pain is now of a milder form.

Jan. 29.—Longer interval between the attacks, and they are now of only a slight prickly character. They are almost entirely gone when he is walking about.

Jan. 30.—Patient was annoyed with the pain all night. He feels a twinge at the angle of the jaw and up the ear. The pain is not severe. The patient was dressed, and looked well.

Feb. 2.—Patient was discharged very much improved.

March 24, 1892.—Patient says that when out one night lately somewhat late he stood for some minutes talking to a friend. There was snow on the ground, and he got a chill. For three nights after this he suffered severe pain in the face.

Oct. 4, 1892.—Returned with neuralgia of spasmodic form in same side of cheek, originating over malar prominence, and shooting towards nose. Fits every few minutes. Not distinctly traced to any cause. Began five weeks ago. Tongue very foul. Ordered blue pill and K.I.

Nov. 3, 1892.—Pain has left right side of face, but has developed on the left side near the mental foramen. Patient still markedly dyspeptic.

May 1893.—Patient is well, and able for his usual occupation.

Remarks.—The neuralgia was evidently originated by the stump of a molar in the upper jaw, which was left for upwards of twenty years to work mischief, a state of matters but too commonly met with. The communicating nerve, therefore, was the dental branch of the second division of the fifth. From this pain spread to most of the branches of the second division, and also to the third division, though it was mainly manifested in the infra-orbital nerve. (The gustatory nerve was tested, but no record kept, unfortunately.)

The neuralgia was typically explosive. The tender spot was just above the socket of the tooth that was supposed to have originated the neuralgia.

Seeing that the fifth nerve was so extensively affected, I thought that the Gasserian ganglion might have to be destroyed before the neuralgia could be cured. I selected the operation of stretching, however, because it was less severe, and would not interfere with a more radical operation, should that be required (as I explained to my patient). I was also induced to choose this operation by Mr Bowlby's strong recommendation of it. I hoped that, as suggested by him, the trophic changes started in the infra-orbital nerve by stretching it would pass backwards and affect Meckel's, and perhaps even the Gasserian ganglion. It is just possible that this might have occurred had time been given, but the return of the neuralgia after five weeks made my patient most urgent to have something more radical done. It was evident, however, that some trophic changes had occurred from the softened condition of the nerve at the second operation.

In regard to the second operation, it consisted in laying bare the infra-orbital foramen and nerve, opening into the antrum without opening the mucous membrane, breaking up the lower wall of the infra-orbital canal, drawing out the nerve (which unfortunately gave way, being very soft in texture from the changes resulting from the first operation), and then destroying the remaining stump of the nerve. This last part of the operation was done with a heated wire, because I could not get at the stump otherwise. I believe that I destroyed the nerve quite up to the Gasserian ganglion. In fact, I thrust the wire back as far as I possibly could. I gave up my intention of removing Meckel's ganglion when I found the nerve give way under my fingers.

It is very interesting to note that after the first operation the pain disappeared quickly, but returned in a few weeks, while after the second operation the pain went away slowly (reluctantly, as it were), but has kept away much longer.

After a year and a half the neuralgic condition returned,—first on the side operated on, and then on the opposite side (at the mental foramen). The patient suffered from dyspepsia, and was treated for this with a good result, the neuralgic pain disappearing with the stomach disorder.

At present (May 1893), more than two years after the operation, he is fairly well and quite able to follow his occupation—suffering occasionally from dyspepsia, due, I believe, to his sedentary and confined occupation and his inordinate appetite.

There are two points in connexion with this case which I would like to refer to specially.

First, the return of the neuralgia, not only on the original side, but on the opposite side also, at a spot the connexion with which is very roundabout, and the association of this apparent relapse with dyspepsia. This association was probably more than accidental, seeing the neuralgia disappeared when the dyspepsia improved. I am sure that such an association is far from uncommon.

The second point is that of surgical interference. This case has given me the impression that interference with the Gasserian ganglion may not be as necessary as some would lead us to suppose. I am sure that I destroyed the second division of the fifth nerve thoroughly in my patient's case. And the result, as yet, has been fairly satisfactory. I believe that any operation, however radical, is only palliative at the best. When once a patient has acquired neuralgia, a "neuralgic habit" is established which is seldom, if ever, got rid of, and may depend more on factors out of the reach of surgery altogether than upon any changes in the nerves themselves that can be got rid of by operative procedures.

I believe, therefore, that minor operations should always be tried before the serious procedure of destroying or removing the Gasserian ganglion is attempted. In my case even Meckel's ganglion was left.

It seems to me that the great moral of these cases to be learned by the general public is that all possible sources of neuralgia, such as bad teeth, should be got rid of as soon as possible, because neuralgia, once started, is practically incurable.

Note.—October 1893. Up to present date patient remains well.

III.—THE ETIOLOGY OF ECTOPIC GESTATION.

By J. C. Webster, M.D., F.R.C.P.E., Assistant to the Professor of Midwifery and Diseases of Women in the University of Edinburgh.

(*Read before the Obstetrical Society of Edinburgh*, 29*th June* 1893.)

Until recently the occurrence of Tubal Gestation has been attributed to the following conditions:—

1. *Those mechanically interfering with the passage of the ovum to*

the uterus,—e.g., peritonitic bands constricting the Fallopian tube; polypi in the tube-lumen; tumours of its wall; tumours of surrounding parts pressing upon it; abnormal foldings of its wall; diverticula from the lumen in the wall.

2. *Those interfering with the peristaltic action of the tube,—e.g.*, adhesions between the tube and neighbouring parts; thickening of its walls by inflammation.

3. *Those destroying the action of the cilia of the lining cells of the mucosa,—e.g.*, endosalpingitis.

A careful analysis of these various conditions, hitherto described as the *causes* of tubal pregnancy, leads to the conclusion that the views current in regard to the subject are hazy and indefinite, their acceptance involving numerous contradictions as well as certain assumptions which are based entirely upon speculation, and in some instances not in accordance with facts. One of these assumptions is to the effect that in normal pregnancy the ovum becomes fertilized in the Fallopian tube; another that this always takes place in the uterus. A very widely-held view is that a fertilized ovum will grow in a tube with a *healthy normal mucosa* if it merely be prevented by some mechanical obstruction from reaching the uterine cavity; another assumption of more recent origin is that this cannot take place, but that development will only occur when the epithelium of the mucosa has been destroyed by inflammation.

That the above-tabulated conditions have been founded upon observations is undoubtedly true. To associate them in some way with the occurrence of the tubal pregnancy is natural; *but to establish them as the ultimate or essential factors in its causation is anything but logical.*

It is my endeavour in this paper to analyze carefully the relationship which these conditions bear to ectopic gestation, and to endeavour to allot to them their true proportional values as factors in its causation. In addition, I desire to bring forward some new observations, in the hope of removing many of the difficulties connected with the subject, and of establishing a more scientific basis for its future investigation.

It is necessary, in the first place, to consider one question which has an important bearing on the subject, viz., where the spermatozoa fertilize the ovum. It is generally believed that their meeting-place is normally the Fallopian tube. Lawson Tait and a few others believe that it is the uterine cavity; they hold that the ciliary action of the epithelium of the tubal mucosa prevents normally the spermatozoa from passing into the tubes. Without referring to the lower mammals, regarding which but scanty observations have been made, facts derived from the study of extra-uterine human pregnancy furnish evidence in favour of the view that spermatozoa can make their way from the uterine cavity into the tube-lumen whose lining epithelium may be healthy. It is not uncommon to find an early tubal pregnancy in the outer end of a tube whose inner end is perfectly normal. Such cases have been examined by Bland Sutton, Martin, myself, and others. This being so, it is difficult to know why fertilization may not take place in any number of cases, where the parts are entirely healthy. That it may also take place within the uterine cavity cannot, of course, be denied. The truth is probably that the spermatozoa are capable of working their way into both uterus and tubes, fertilizing the ovum wherever they chance to meet it.

Another important question to be considered is the following:—*Is there any ground for supposing that a fertilized ovum can develop in the normal mucosa of the Fallopian tube?* That such a thing is possible has long been believed, especially by those who have insisted on the importance of mechanical obstruction as a cause of tubal gestation.

If the genital tract be studied phylogenetically, it is found that in the lowest animals there is no marked distinction between oviduct and uterus, that in higher forms each lateral tube becomes differentiated into an upper oviduct portion and a lower uterine portion, and that in the very highest forms the lower portions blend into a single uterus. In these highest mammals only the uterus is able normally to furnish the place of development for the ovum; the upper ends of the original lateral tubes, *i.e.*, the oviducts or Fallopian tubes, though remaining in continuity with the uterus, retain only the power of carrying the ovum from the ovary to the uterus. The tubal mucosa and that of the uterus (*corpus uteri*) behave differently in the reproductive process: the former is passive, the latter active; the one undergoes no important changes, the other reacts markedly to the genetic influence, becoming transformed into the decidual tissue, which is, it must be believed, essential to the attachment and development of the young ovum.

The differentiation is as well marked as that between the lining membranes of the œsophagus and stomach. There is no more authority for supposing that the normal tube can perform the function of the uterus than for believing that the œsophagus can perform that of the stomach. In each of these cases the evolution of structural differences has been accompanied by marked functional differentiation.

No doubt the resemblance between the epithelial cells of the uterine and tubal mucous membranes and their direct continuity have helped to establish the assumption that the ovum can develop in relation to one set as well as in relation to the other. Such an assumption is, of course, entirely unwarranted, because structural similarities do not necessarily imply physiological harmonies or identical reaction-tendencies.

Moreover, all recent work—*e.g.*, that of Minot,[1] Hart and Gulland,[2] myself, and others—goes to show that the lining epithelium of the mucosa, both in tubal and uterine gestation, plays an entirely negative part as regards the development of the ovum.

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[1] "Uterus and Embryo," *Journ. of Morphol.*, April 1889.

[2] *Lab. Reports*, R.C.P. Ed., vol. iv.

Next, what is to be said regarding the belief that the ovum can develop in the tube only when the lining epithelium has been destroyed by inflammation ?

It might be sufficient, in refutation of this statement, only to mention those cases of tubal pregnancy in which no inflammatory or other diseased condition is found in the mucosa.

Moreover, *in some of the cases* in which inflammation is found, there can be no doubt that it follows upon the disturbances in the tube attendant upon the development of the gestation.

This has been strongly urged of late by Martin,[1] whose recent observations have led him to give up his older views regarding the part played by endosalpingitis in causing tubal pregnancy.

One might also justly state, that whereas inflammation in the endometrium is not favourable to the development of uterine gestation, so inflammation in the tubal mucosa is *unfavourable to the development of a tubal pregnancy.*

I wish, however, to consider this statement as part of a more comprehensive idea which has been strongly urged of late by Bland Sutton,[2] Berry Hart, and Lawson Tait,[3] viz., *that the human ovum can graft itself only on a connective tissue from which the covering epithelium has been removed.* Mr Tait holds especially that in normal uterine pregnancy this supposed necessary raw surface is prepared by menstruation, as was first suggested by Pflüger, and in tubal pregnancy by endosalpingitis. In referring to the uterus he uses the words "a *healthy mucous surface freshly denuded,*" and in reference to the tube he says that "a desquamative salpingitis could put the mucous lining of the tube into a condition exactly similar to that of the uterus." This statement is open to the criticism, that while a resemblance might possibly be pointed out between an endometrium partially denuded and an early acutely inflamed mucosa, there is not a very close resemblance in the case of a chronic inflammation surface.

That these authors are right in insisting upon the passive and unimportant part played by the epithelium of the mucosa both in the case of tubal and uterine pregnancy cannot be too strongly urged. All the latest embryological investigations give support to the view that the attachment and early development of the ovum take place entirely in relation to the sub-epithelial connective tissue of the mucosa. I take exception, however, to the explanation of the early establishment of this relationship, on account of the great difficulties in the way of believing that menstruation is the process essential to the removal of the epithelium and the consequent laying bare of the connective tissue. These difficulties are as follows:—

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[1] "Ueber Ektopische Schwangerschaft," *Berlin. Klin. Wochenschr.*, 1893, No. 22.

[2] *Surgical Diseases of the Ovaries and Fallopian Tubes*, London, 1891.

[3] *Diseases of Women, etc.*, Leicester, vol. i. 1889.

1. Pregnancy may occur in a girl before the onset of menstruation,—at a time, therefore, when the mucosa cannot be denuded by that process.

2. It may occur late during the period of lactation, when there is no menstruation, and after the mucosa has been completely renewed.

3. It may take place at the menopause during a period of amenorrhœa.

4. It may occur in periods of amenorrhœa associated with diseased conditions, *e.g.*, anæmia, phthisis.

5. Clinical experience of cases of pregnancy following a single coitus shows that the ovum may begin to develop at any time—not necessarily immediately after menstruation. (*Evidence in regard to this point, however, is of doubtful significance, owing to the uncertainty in our knowledge as to how long the spermatozoa may remain in the genital tract, and how long the ovum may take in some cases to reach the uterus.*)

6. In the great majority of the mammals menstruation does not take place, and in many of them we know that the ovum develops in relation to the connective tissue of the mucosa.

Indeed, it is not at all necessary to look to menstruation as the process by which the epithelium is removed. The absorptive power of the trophoblast, or outer layers of the fœtal epiblast, is a most important factor in bringing about its disappearance. My recent studies in early tubal pregnancy lead me to believe that this is also accomplished, partly, by another agency, viz., the rapid changes in the connective tissue of the mucosa leading to the formation of the *decidua vera*, and causing the covering epithelium to be stretched and broken up.

(Regarding the exact nature of menstruation we are still in the dark. It seems probable that it is not the same as that in the lower animals; it is not dependent upon ovulation, just as the latter is not dependent upon menstruation; it is not necessary to conception; it probably only occurs in relation to the erect posture; in the highest apes it occurs in captivity only to a slight extent and not in all cases, while in the wild state it does not appear to take place; among mankind it becomes a more marked characteristic of woman as civilisation advances.)

Having thus considered these important questions, I wish now to bring forward certain facts which seem to me to suggest a sound basis for an explanation of the occurrence of extra-uterine gestations.

I have referred to the gradual evolution of the Fallopian tube and uterus, and to the marked differences in function which exist between them in the human female.

Hitherto it has been believed that in every case of uterine gestation the decidual changes in the mucosa, which are apparently essential to the early ovum, and which result from some sympathetic reaction following its fertilization, take place only in the body of the uterus, the tubal mucosa remaining unchanged. This view is based upon the microscopic examination of the tubes in normal pregnancy. It is also held that in cases of single tubal pregnancy, while the uterine mucosa undergoes marked decidual change, the non-pregnant tube of the other side remains practically unaltered. Recent observations which I have made prove that the latter statement is not accurate, and throw some doubt upon the value of observations made upon the tubes in normal pregnancy. (To study these points thoroughly it is necessary to examine serial sections of *every part of the tube*, not of one part only, as is usually done.)

The observations to which I refer are as follows:—In examining a large number of tubal gestations *I have found marked differences in the extent to which a decidua vera is formed.* In some cases only a small part of the mucosa undergoes this change, in others a large part. In no case is there an absence of decidual formation. In those instances in which I obtained the non-pregnant tube (only in *post-mortem cases*) I always examined a small part of it. In one case, however, in which the tube was enlarged in its ampullary portion, I made a thorough examination of every part of it, and found, to my great surprise, that an irregular ring-like portion of the ampullary mucosa in its entire circumference differed markedly from the rest of the mucosa, as well as from the mucosa of every other tube that I had examined. Later, I shall publish minute descriptions and drawings of the conditions found. For the present a few words will suffice. The differences consisted in, in the first place, a *simpler arrangement of the folds* than is found in the normal *ampulla;* they were much fewer in number, shorter, and only slightly branched. In the normal ampulla the delicate branching mucous fringes, as seen on transverse section, practically fill the tube-lumen. In this case they formed thick projections,—club-shaped, finger-shaped, wart-shaped, etc., extending inwards only for a short distance. In the second place this part of the ampullary mucosa *showed marked decidual formation*, the large cells resembling exactly those found in the uterus in normal pregnancy.

The tube of the opposite side (the left one) was about two months pregnant, the uterine mucosa showed marked decidual changes, the left ovary contained a *corpus luteum,* the right one (that on the non-pregnant side) containing none. This case is most instructive. It emphasizes most strongly that decidual formation is due to the influence of the *fertilized ovum* in the genital tract; that this influence can act at a distance, direct contact of the ovum not being necessary; that while in tubal pregnancy the uterine mucosa always undergoes this change, the *tube of the other side may also sometimes be similarly affected.*

All these facts, it seems to me, taken along with those relating to the evolution of the uterus and Fallopian tube, suggest a hypothesis which lends itself to a satisfactory explanation of all the well-recognised forms of ectopic gestation.

Among those animals (some non-mammalians) possessing a genital tract, the least specialized condition is that in which there is no distinction between oviduct and uterus, in which the tract is bilateral, and in which the ova may develop practically along its whole extent. In higher forms, certain mammalians, differentiation has occurred in the Müllerian ducts, as I have already described; in many of these—*e.g.*, cat—with bicornuate uterus several ova develop in the whole extent of each horn, the mucosa undergoing the necessary decidual changes. In other forms with bicornuate uterus—*e.g.*, cow—only one ovum, as a rule, develops in one of the horns, *but the mucosa of both horns undergoes, as a result of the genetic influence, marked decidual changes;* these changes are in the case of the non-pregnant horn, as far as we know, entirely unnecessary to the development of the ovum in the other horn. (It is well known that pregnancy may go on perfectly well in cases where one horn is absent.) When we come now to the human female, in which the single uterus exists, we find that the decidual changes induced by pregnancy, in the great majority of cases take place in the uterine mucosa, where the ovum normally grows.

However, *in some cases,* as I have shown, the tubal mucosa can, in great or small extent, respond to the genetic influence, as well as that of the uterus, in all probability because of some developmental fault whereby there is reversion either of structure or reaction tendency in the tubal mucosa to an earlier type in mammalian evolution,—I mean that in which a larger portion of the Müllerian ducts showed decidual reaction.

Because of these occasional changes in the Fallopian tube, conditions are brought about capable of establishing with a fertilized ovum that relationship which is essential to its development. If, then, the deduction be established that it is possible for a fertilized ovum to grow only in relation to that part of the genital tract, whether tube or uterus, in which the genetic reaction occurs, the explanation is evident why, in the human female, a pregnancy may occur *sometimes* in a part of the genital tract outside the uterine cavity.

When the above-mentioned conditions exist in any case, several factors determine whether a fertilized ovum shall develop in the tube or uterus. The place of fertilization of the ovum is important. Ectopic gestation probably only occurs when this takes place in the tube above the part of the mucosa showing the decidual reaction. When it occurs in the uterus the gestation will only take place there. Fertilization may occur in that tube which does not show the decidual reaction; it may occur in the tube showing the reaction, but at a point lower down. It is possible, however, that it may occur above the reacting part, and yet be carried down past it to the uterine cavity, if no conditions exist which can prevent this taking place. And in this connexion we are able to understand the part played by such conditions as inflammation, tumours, etc., in the tube or outside it, which lead to some interference with the free continuity of the tube-lumen. Given the fertilization of the ovum high in the tube, the obstruction to its free passage to the uterus after this takes place, along with *the occurrence of the necessary decidual reaction in the mucosa* with which the ovum comes in contact, and we have a satisfactory explanation of the pregnancy which develops.

The adoption of these views, which imply that the ovum can only begin its development on a tissue capable of a special genetic reaction, and therefore only in some portion of the passages derived from the original Müllerian ducts, makes it *difficult to believe in the possibility of the occurrence of a Primary Abdominal pregnancy.*

Though of late, owing to the writings of Bland Sutton, Lawson Tait, and Berry Hart, belief in the existence of such a gestation has been widely discredited, no well-founded reason has been raised to show why it should not take place. Indeed, considering the factor which these authors had believed to be of chief importance in the development of tubal pregnancy, viz., inflammation destroying the mucosal epithelium, it does not appear, according to that view, why a fertilized ovum might not attach itself and grow on a part of the wall of the abdominal cavity which had lost its superficial covering of cells through the same pathological process. According, however, to the view which I have advanced, the primary intra-peritoneal development is improbable, because the peritoneal tissues cannot, as far as is known, undergo the changes required for the establishment of the necessary relationship with the young ovum.

As regards the ovary there is more difficulty. We have no reason to believe that the Graafian follicles can respond to the genetic influence, and there is no proof that a pregnancy has ever started in them.

Supposed cases of Ovarian pregnancy require to be studied carefully, and in every instance must be distinguished from the following conditions which may be mistaken for it,—viz., pregnancy in the outer end of the tube which has become intimately connected with the ovary; pregnancy in an accessory tube end which has become attached to it; pregnancy in the ovarian fimbria, which may be hollow sometimes, representing the extreme outer end of the tube; pregnancy in the tube which has extended into the ovarian sac of peritoneum, which occasionally occurs in women. *Primary* development of the ovum in the ovarian sac is as improbable as in relation to any other part of the peritoneal cavity.

IV.—STUDIES IN FŒTAL PATHOLOGY AND TERATOLOGY.

(SECOND SERIES.)

III. ALLANTOIDO-ANGIOPAGOUS TWINS—PARACEPHALUS DIPUS ACARDIACUS.

By J. W. BALLANTYNE, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, Minto House, and on Midwifery and Diseases of Women, Medical College for Women, Edinburgh.

(*Read before the Obstetrical Society of Edinburgh*, 10*th May* 1893.)

(*Concluded from page* 331.)

II. OF THE PLACENTA AND CORD.

It is probable that in all the cases recorded there existed either a single placenta or two placentas in vascular connexion with each other; but I have been unable to find any details concerning the fœtal annexa in a considerable number of instances (Nos. 1, 3, 5, 7, 8, 16, 19, 20, 21, 28, 31, 35, 37, and 39). The placenta supplying the twins was definitely stated to be single in Nos. 4, 6, 10, 11, 14, 24, 25, 26, 27, 29, 30, 32, 33, 34, 36, and 38. Only in one instance (40) was the accoucheur of opinion that there were two separate placentæ, but the clinical details of that case seem to show that there was at least a very close vascular connexion between the two, if not a true organic union. In only one or two cases are further details of the characters of the placenta given: it was not infrequently said to be large; it was once described as normal in appearance (33), as tongue-shaped (30), and in No. 11 it was said to contain no red blood, but only lymphatic vessels. It is probable that whilst the placenta and chorion was single, the amnion was usually double. This was the arrangement found in Nos. 14, 25, 26, 32, 33, 34, and 36; but in No. 29 it was noted that the amniotic sac was single. The sac of the normal fœtus was the larger in No. 33. Details are wanting in other instances.

When the umbilical cord of the normal twin was mentioned it was said to be normal, save in No. 33, in which it was very narrow, much twisted, and inserted on the membranes. The cord of the monster, on the other hand, was usually defective. It was described as small, short, and thin in Nos. 4, 14, 21, 25, 26, 27, 28, 30, 32, 33, 34, and 40; it had a marginate insertion in Nos. 25, 29, and 32; it passed to the placenta in the membranes in Nos. 26, 33, and 40; and it contained two arteries and one vein in Nos. 3 and 21, one artery and one vein in Nos. 10, 20, 26, 29, 32, 33, 36, and 40; two veins and two arteries in Nos. 24 and 27; and one vein and no artery in No. 30. Sometimes it was noted that the vessels of the two cords anastomosed (*e.g.*, Nos. 33 and 36), and no doubt this was always the case.

The vessels of the cord entered the body of the fœtus, and since there was no heart for them to pass to, they became directly continuous with the fœtal bloodvessels; but the vascular arrangements thus produced varied within wide limits in different cases. Within the deformed fœtus there were usually two large vessels, one corresponding to the vena cava inferior and receiving the blood from the umbilical vein, and the other representing the aorta and becoming continuous with the umbilical artery or arteries. These two vessels received and gave off in a more or less irregular manner branches which could, however, usually be identified as subclavian, carotid, jugular, mesenteric, iliac, renal, etc.

The most complete descriptions of the vascular arrangements were those found in connexion with cases 10, 20, 21, 24, 25, 27, 29, 30, 32, 34, 35, 36, 37, and 38. In No. 20, in which the cord contained one artery and one vein, the following vessels were found: There was an aorta which gave off several branches in its course; above, it bifurcated into two carotids after giving off two subclavians; and below, it divided on the left side into four branches, and on the right it had one branch, the right common iliac; and there was also a vena cava which was formed superiorly by two trunks from the head and by the subclavian veins, whilst inferiorly it was continued downwards as the iliac veins; it received various veins, amongst which were the umbilical and the portal, and had no connexion with the liver. Another type of arrangement was found in Nos. 24 and 27, in which there were two umbilical arteries and two veins. In No. 27 one umbilical vein entered the body, proceeded downwards, divided into the two iliac veins, and received the left renal vein. The other umbilical vein passed upwards in the body, and was joined by the right renal vein, by the hepatic, mesenteric, intercostal, and jugular veins. The umbilical artery divided into trunks immediately within the body. One of these, the smaller, passed downwards as the iliac artery of the left side; the other, a much larger vessel, passed to join the aorta which received the mesenteric and other branches, and ended above in the carotids and subclavians, and below in the hypogastric and external iliac of the right side. The vessels in the other recorded cases had an arrangement differing only in a few details from those found in the above instances.

General Characters.

As will have been learned from the foregoing analysis, acardiac paracephalic fœtuses resemble those provided with hearts in a very striking way, so that many of the general characters of the latter are equally those of the former. So close are the resemblances which exist between these two kinds of monsters, both in their clinical history and pathological anatomy, that their classification as sub-groups of the variety paracephalus dipus is fully warranted. This is true, notwithstanding the fact that in one sub-group the heart is absent, whilst in the other it is present, albeit usually malformed. It is therefore evident that the absence of this organ cannot be regarded as an all-important character for purposes of classification. In fact, the resemblance between cardiac and acardiac paracephali is so great that it is impossible before dissection to predict whether a heart will be found or not in any given case.

Another interesting fact is found in the want of correlation in the malformations: thus the heart may be entirely absent, and the brain not only present, but very nearly perfect in form and parts (No. 24); and again, the skeleton may be not far removed from the normal, whilst nearly all the viscera are entirely wanting.

I shall here mention only those characters in which acardiac paracephali seem to differ from those provided with hearts. Possibly the difference noted in the first characteristic is only accidental.

1. The mother is not infrequently a primipara, and does not by any means always possess a previous bad obstetric history.
2. Whilst in some cases the head is hydrocephalic, as is usually the case in cardiac paracephali, it is also not uncommonly in a state of osseous synostosis.
3. The heart is always absent.
4. It would seem that in this variety of monster there is one circulation, and that an imperfect one. The blood is probably forced on by the heart of the normal twin.

LITERATURE.

1. GOELLER (G. C.).—*Miscell. curiosa med.-phys., etc.*, Dec. II., Ann. ii., Observ. 143, p. 311, 1683, "Abortus humani monstrosi hist. anatom." Illustrated.
2. SAVIARD (B.).—*Nouveau recueil d'observations chirurgicales*, Observ. 94. Paris, 1702.
3. CURTIUS (C. W.).—*De monstro humano cum infante gemello.* Diss. Lugduni Batavorum, 1762. Illustrated.
4. MARRIGUES.—*Acad. Roy. des Sciences*, vol. iv. pp. 123 and 129. Paris, 1763.
5. LECAT (C. N.).—"A Monstrous Human Fœtus," *Philosophical Transactions*, vol. lvii. p. 1, 1767. Illustrated.
6. BÜTTNER (L. G.).—*Anatomische Wahrnehmungen*, p. 188. Kœnigsburg, 1768.
7. ODHELIUS (E.).—*Neue Abhandlungen der Konigl. Schwed. Akad. der Wissensch.*, vol. vi. p. 172, 1786. Illustrated.
8. KÄHLER (D.).—"Geschichte einer Zwillings-Geburt, mit einer Missgeburt verbunden," *Archiv für die Geburtshülfe, Frauenzimmer — und Neugebohrner Kinder-Krankheiten*, Bd. ii. Stük. ii. p. 58, 1789. Illustrated.
9. BORGNONI (G.). — "Parto gemello mostruoso," *Opusc. Fossombrone*, 1806.

10. Brodie (B. C.).—*Philosophical Transactions of the Royal Society of London for the Year* 1809, Part 1, p. 161.
11. Clesius (J.).—*Etwas für Eheleute über Entstehung und Verhütung der Missgeburten.* Hadamar, 1812.
12. Boutin (E.).—*Descriptio monstri humani.* Berolini, 1817.
13. Rossi (F.).—"Descrizione d'un feto mostruoso," *Giornale Arcadico,* p. 163. Roma, 1820.
14. Laroche (V.).—"Fœtus monstrueux sans face," *Essai d'anatomie pathologique sur les monstruosités . . . . de la Face,* p. 65. Paris, 1823. Illustrated.
15. Peschier.—*Liter. Annalen des ges. Heilkunde,* p. 406, 1826.
16. Rodati.—Specimen in Museum of Bologna, placed there before 1827 and described by Taruffi in his *Storia della Teratologia,* vol. ii. p. 154, 1882.
17. Svitzer, in Herholdt's *Anatom. Bescrivelse over sem. mennesk. misfostere.* Copenhagen, 1829.
18. Tonnelè.—*Bulletin de l'Acad de Méd.,* Jan. 6, 1829.
19. Seiler (B. G.).—*Beobachtungen ursprüngl Bildungsfehler und ganzlichen Mangels des Augen.,* p. 25, Dresden. 1833.
20. Embleton.—"Case of Human Monstrosity," *Edinburgh Med. and Surg. Journal,* vol. lvi. p. 423, 1841. Illustrated.
21. Jackson (J. B. S.)—*A Descriptive Catalogue of the Anatomical Museum of the Boston Society of Medical Improvement,* p. 239. Boston, 1847.
22 and 23.—Hempel (C. F.).—*De Monstris Acephalis,* pp. 12 and 27, Hafniæ, 1850.
24. Calori (L.)—"Storia d'un feto mostruoso," *Mem. della Acad. delle Scienze di Bologna,* vol. ii. p. 355, 1850.
25. Luton.—"Fœtus monstrueux," *Mem. de la Soc. de Biologie,* p. 315, 1855.
26. Desormeaux and Gervais.—"Sur un fœtus monstrueux," *Acad. des Sciences de Montpellier,* Feb. 1860. Illustrated.
27. Poppel (J.).—"Ueber herzlose Missgeburten," *Monatsschrift für Geburtskunde,* Bd. xx. p. 260, Obs. 1. Berlin, 1862. Illustrated.
28. Genth (C. P.).—*Beiträg zur Kenntniss der herzlosen Missgeburten.* Diss. Berlin, 1868.
29. Calori (L.).—"Sul sistema vascolare d'un mostro umano acardiaco," *Mem. dell' Istituto di Bologna,* series 2, vol. ix. p. 267, 1869.
30. Moldenhauer.—"Anatomische Beschreibung eines acardiacus," *Archiv für Gynæk.,* vol. v. p. 337, 1873.
31. Lusk (W. T.).—*Amer. Journal of Obstetrics,* vol. viii. p. 662, 1875-76.
32. Nitot (E.).—*Annales de Gynécol.,* vol. vi. p. 99, 1876; and *Archives de Tocologie,* vol. iii. p. 756, 1876.
33. Meïmaroglu (P. A.).—*Ueber einen Acardiacus.* Inaug. Diss. Halle, 1879. Illustrated.

34. Breus (C.).—"Zur Lehre von dem Acardiacus," *Wiener Medicinische Jahrbücher*, p. 57, 1882. Illustrated.
35. Taruffi (C.).—*Storia della Teratologia*, ii. p. 154, 1882.
36. Koch (G. W.).—"Ueber einen menschlichen Acardiacus," *Archiv für Gynæk.*, xxvi. p. 290, 1885. Illustrated.
37. Donat—In Koch's paper, p. 306 (*vide supra*). Illustrated.
38. Calori (L.)—*Di un mostro umano acardio.* Memoria, Bologna, 1885. Illustrated.
39. Doran (A.).—*London Obstet. Soc. Trans.*, xxxi. p. 24, 1889. Illustrated.
40. Ballantyne (J. W.).—"Description of a Fœtus Paracephalus Dipus Acardiacus," *Edinburgh Medical Journal*, March 1893. Illustrated.

Additional cases discovered after analysis was completed.

27a. Virchow.—"Acephalus," *Monatsschrift für Geburtsk.*, vol. xx. p. 18, 1862 (may have belonged to Sub-Group I., Cardiacus).
39a. Brosin.—*Centralblatt f. Gynäkologie*, vol. xvi. p. 963, 1892.
39b. Lowy (M.).—"Ueber einen Fall von Acardiacus Anceps." *Prager Med. Wochenschrift*, xvii. p. 157, 1892.

V.—SOME PRACTICAL RESULTS FROM THE CHEMICAL EXAMINATION OF THE CONTENTS OF THE HEALTHY STOMACH.

By Alex. Lockhart Gillespie, M.D., F.R.C.P. Ed., Medical Registrar, Edinburgh Royal Infirmary.

(From the Laboratory of the Royal College of Physicians, Edinburgh.)

(*Read before the Medico-Chirurgical Society of Edinburgh on 18th January 1893.*)

(*Continued from p. 321.*)

Consideration of the Results obtained by the Analysis of the Contents of the Human Stomach at different Hours.

The first thing that struck me after analysing these fluids was *the similarity between the acid and chlorine curves in general* of both these natural and artificial digestions. The curve rises quickly in both, and, as a rule, in both begins to fall about the third hour, when, in fact, the amount of acid combining with the proteids is less than the quantity of acid and proteid diffusing through or being absorbed; the fall, however, as is only natural, being slower in the artificial digestions.

Secondly, Hayem and Winter's observation on the *small quantity of free hydrochloric acid* present during digestion is corroborated, and the exact reason of its apparent absence during the first part of digestion established.

My opinion of the matter is this. A small percentage of HCl is constantly, from the very commencement of gastric digestion, being secreted. This at once combines with proteids, the combination obscuring the reactions peculiar to a free acid. The intimate nature of the combination I enter on more fully elsewhere (*Journ. of Anat. and Phys.*, Jan. 1893), but I strongly question the accuracy of Mathieu, Richet, Hayem, or Winter's views as to its being an amido-acid, a hydrochlorate of leucin. Without pepsine, HCl, even if it saturate the proteid molecule, cannot produce any appreciable change in it, save the formation of some acid albumen. Kühne has said, indeed, that HCl, without pepsine, is capable of changing a small quantity of proteid into peptones—that is, peptones and albumoses. With pepsine present, however, the case is different; for, as the acid saturates the albumen or globulin molecule,—a compound molecule like starch (*cf.* Bunge),—the molecule splits into simpler forms. If free acid be still present, this process may go on until peptones are reached. The essential part of the process is, I believe, a splitting-up of a complicated molecule by means of free acid, in the presence of a ferment, into simpler molecules, each of which has a higher saturation point for acid—a greater avidity for it. These molecules in turn, when fully saturated, split up in a similar manner into still less complicated bodies.

This theory coincides with the course of the acidity in the stomach. At first the percentage of chlorine combined to proteids is small, chiefly because all the proteid has not been attacked by the acid, but, as digestion goes on, the percentage of acid, combined with proteids, or of the chlorine similarly combined, rises, and that although peptones with their acid are being absorbed. That is to say, then, that the albuminoids resulting from digestion probably take up more acid than the original albumen or globulin.

On comparing my results with those of Cahn, I find that, while in some respects similar, in others they differ considerably. For instance, the curves of the solids expressed in percentages rise rather than fall during his experiments; while the variations of the hydrochloric acid are very small, rising only slightly until the third hour in one experiment, and only ·08 per cent. by the second hour in another. He found that the amount of acid albumen remained almost stationary, 11–·16 per cent.; I only found traces of this albuminoid in any of my experiments on man. The amounts of peptone and albumose which I could separate out were far below Cahn's figures, who found 2·18 per cent. of peptone, using Kjeldahl's method, in the contents of the stomach, the total solids of which only reached 2·80 per cent.!

I have, in addition to his investigations, included tables of the different acidities and chlorine, of the ash, and of the various forms of proteid.

From his researches Cahn believed that most of the stomach contents were expelled into the duodenum with the proteid constituents peptonised,—that is, that peptones are not absorbed by the stomach in any great quantity.

I combat this view on the following grounds:—

1. The course of the combined acidity and of the quantity of proteids present is so similar in the digestion as occurring in man and in dialysing tubes, that probably the same cause, *i.e.*, abstraction of peptones, has some influence in both. In the dialyser peptones can and do diffuse, carrying the combined acid with them. In natural digestion the peptones are absorbed by the cells of the stomach wall without the actual aid of diffusion.

2. On separating the albumoses from the peptones it is seen that, while the peptones tend to fall as digestion proceeds, the quantity of albumose remains fairly constant to the end of digestion. That is to say, that, in the course of the production of peptones from albumens, albumoses are being constantly formed, and as constantly are further acted on by HCl producing peptones. The peptones are absorbed at a certain rate, and as the original amount of proteid diminishes, so the albumoses formed from them diminish, but more slowly, and often not until close on the close of the digestive process.

3. An objection which could be raised to any deductions drawn from percentage results, due to the inflow of fluid during digestion and consequent lowering of the amount of proteids obtained, or of total solids, is negatived by Cahn's results, for he withdrew the whole contents of the stomach at each period,—a proceeding I found it impossible to do on man,—and estimated the absolute quantity of total solids, both dissolved and undissolved.

He found these to diminish as the digestion advanced, and the diminution is so marked in one of his tables,—from 40·73 gr. at the half hour to 15·82 gr. at the second hour, or 11·63 gr. at the 2½ hours,—that it cannot simply be due to absorption of inorganic salts. And unless the material which has disappeared has passed through the pylorus, which I do not believe, it must have been absorbed.

4. As a rule, I found the total solids diminished in quantity as digestion went on. In Experiment VII. the dissolved solids increased slightly, the total unfiltered decreased. The decrease was generally more than could be explained merely by the absorption of inorganic salts. In considering this, I must note that as I withdrew a certain amount of the contents at each half hour or hour, the quantity of solids left was necessarily smaller; on the other hand, however, I noticed that the consistency of the fluid seemed only to vary slightly, and it appears to me as probable that the amount of fluid present does not change much during digestion, absorption and secretion keeping the contents at a fairly constant concentration, even if a large quantity of fluid be taken with the food.

5. Moritz, who performed some very similar experiments to mine, but which were not so full, washed out the stomach of a boy after

meals, and found the total hydrochloric acid most at the third hour, ·4 per cent., about the same at the fourth hour, and then a slow diminution. He seldom got any reactions for free HCl until the second hour, but they became marked afterwards. The albuminoids were most at the third hour, and diminished rapidly after that. Moritz included all acids in his total HCl, and had no means of differentiating between combined and free HCl quantitatively. He advises a re-examination of any specimen of stomach wash with a strong biuret reaction and no free HCl, an hour or an hour and a half after. His work then gives, as far as it goes, much the same result as mine, although in their original form they afforded little opportunity for useful deduction.

6. Considering the relation of my work and that performed by Hayem and Winter, I confess that they are on the same lines, but I contend that I have carried the matter forward, in some degree at any rate. I think I should here note my conclusions, from the foregoing experiments, as to the correctness of their views. Their proposition that hydrochloric acid combines with proteids, and that when in that condition it does not volatilize like pure HCl, I hold as proved, and regard it as a most pregnant fact,—a fact which should be of immense use in future when investigating the contents of the stomach, both quantitatively and qualitatively. The exact form of combination, however, cannot be, in my estimation, a combination with leucin; but this point I have investigated more fully elsewhere. These authors have demonstrated the curves of the chlorine in its different forms during digestion in the dog; these curves I have obtained and corroborated from digestion in man, also, however, pointing out the more exact relation of the combined chlorine curve to the amount of proteid undergoing digestion.

With regard to the point brought forward by Hayem and Winter as to the large quantity of fixed chlorine obtainable from the stomach contents—they experimented in this case on dogs—when only distilled water had been ingested, I have little data to go on. I tried an experiment on a patient by giving him a drink of distilled water, but failed to siphon sufficient fluid off to test, and even that was principally saliva.

I examined, however, the contents of the stomach of the patient on whom I performed the principal experiments before he took any food on two different occasions, the stomach being practically empty in both. The fluid obtained was small in quantity, very slightly acid, and only contained a very small quantity of chlorine, and of only a trace fixed. Even part of the fluid may have been secreted by the mucous membrane of the stomach irritated by the end of the tube, the rest being composed of swallowed saliva. In the second case the proteids amounted to very little,—they were not estimated in the first,—and that little was probably due partly to mucin, although traces of either albumose or of peptone were present.

In this case, then, the stomach was not absolutely empty after a twelve hours' fast, but contained traces of proteid and acid dissolved in a small quantity of water. The fixed chlorine was very small in amount.

Now, as I have already said, Hayem and Winter found the fixed chlorine to increase up to a certain point in the digestion of distilled water in the dog. They experimented on an animal in whom a gastric fistula had previously been made, and obtained the following quantities of chlorine after giving 400 gr. of distilled water by mouth :—

Time.	Total Chlorine.	Fixed Chlorine.	Combined Chlorine.
10 min.	·0657	·0438	·0219
30 min.	·073	·0657	·0073
60 min.	·14	·116	·03
80 min.	·219	·153	·066
100 min.		Stomach empty.	

There was no free HCl at any time.

On examining the above table one is at once struck with the fact that there was no free HCl present, and only a very small quantity of combined acid per cent. Arguing from my results, I would say that there could only have been an infinitesimal secretion of gastric juice; for, if any quantity had been secreted, where had the free acid disappeared to? I do not believe that any one will support a theory which depends on the secretion of almost a pure common salt solution by the gastric mucous membrane, the amount of combined chlorine never rising above one-third of the fixed. Now, the saliva is known to contain mucin and small quantities of serum albumen and globulin, and although mucin is not digested in the stomach (*cf.* Moritz), I have found that HCl combines with it, so that the swallowed saliva may cause the secretion of a small quantity of HCl from the stomach glands sufficient to combine with the proteids in it and to digest those that are digestible. Saliva also contains from ·2 to ·3 per cent. of salts, chiefly chloride of sodium. Again, we know that pure water is very rapidly absorbed from the stomach, so that probably, during the time occupied by the experiments, most of the original water had either been used for the previous testing or had been absorbed, causing a progressive rise in the percentage of the salt present, until it came close to what is present in normal saliva (·15 per cent.). In fact, I utterly and entirely disagree with the authors on this point.

The conclusions I would draw from the foregoing experiments are briefly as follows:—

1. *Free HCl* is secreted by the stomach glands from the moment at which food enters the viscus.

2. *First stage of gastric digestion*, during which no free HCl is present, but the total acidity constantly rises,—the stage of

organically combined HCl, with, frequently, the addition of traces of free organic acids.

3. *Free HCl appears* in the stomach contents, the time of its appearance varying with the composition of the food, with its concentration, and with the state of the gastric mucous membrane. The time varies between the first half hour to the second or third hour.

4. *Second stage of gastric digestion*, both free and combined HCl present. Acidity rising.

5. *Third stage of gastric digestion*, both free and combined HCl present. Total acidity falling.

6. The acidity during the earlier part of the first stage is so small that it can probably allow the *amylolytic action of the saliva* to go on for a short time.

7. The free HCl secreted at first combines at once with the proteids present in the food.

8. Hydrochloric acid organically combined is *less antiseptic* than pure HCl.

9. The total solids, both of the filtered and unfiltered contents, fall per cent. from the commencement.

10. The acidities per cent. differ *in the filtered and unfiltered contents.* The total acidity is lower in the filtered contents; the combined is generally higher, the free lower, than in the unfiltered.

11. The *inorganic salts* diminish per cent. from the commencement.

12. There is generally a great *excess of fixed chlorides* at the beginning of digestion, due to ingestion of NaCl and other chlorides with the food. This excess soon disappears.

13. *The total proteids per cent. in solution fall* during digestion.

14. *Albumen* (*probably mucin*) *increases* per cent., *albumoses* remain stationary, *while the peptones* diminish largely per cent.

15. *The different forms of albumose* (Chart IV.) vary little; proto-albumose is least in amount; the quantities of hetero- and deutero-albumoses are very equal.

16. *Micro-organisms are present in large numbers* at the beginning of digestion; the numbers diminish as digestion goes on.

17. *The stomach contents have no further digestive power* unless there be some free HCl present.

18. *Digestion in the stomach* is very similar in its results to *digestion in a dialyser*, but in the latter absorption does not go on so quickly.

19. *The great factor in causing the courses* of the acidities and chlorides to be similar both in the stomach and in dialysers, and at different times, after varying diets, in the same stomach, is *the constant accession of free HCl, in small quantities,* to the contents of the viscus or dialyser tubes.

20. *The usual percentage of acid* present in the contents of the stomach as given in text-books on physiology is very misleading,

unless the time after the meal and the nature of the meal be taken into consideration.

The total acidity may be from	·108	to	·36 per cent.
The combined acidity from	·072	to	·324 per cent.
The free acidity from	·018	to	·09 per cent.

But they vary so much, from the above-mentioned causes, that it would be futile to lay down any hard and fast limits.

21. *The free HCl* is seldom over ·09 per cent. at any hour after a proteid meal. It may rise to ·162 or ·27 after a meal chiefly carbohydrate in character.

22. Further consideration of the subject leads me to suppose that HCl combined to proteids does not cause heartburn, at least to any appreciable extent, but that both free HCl and free organic acids do so, the latter especially.

23. That the pain which comes on immediately after food has been taken is probably due to the presence of an ulcer, or of erosions, or is neurotic in origin. Coming on at the time when free HCl should first appear in the contents,—allowance in calculating this must be made for the character of the foregoing meal,—this acid is probably the offender. If accompanied with flatulence and heartburn, and occurring at variable times after food, I would suspect some fermentation, and, if carbohydrates are badly borne, diminution in the secretion of HCl as well.

24. Though not directly following from the experiments detailed in this paper, I would like to include among these conclusions the fact that a study of the acidity of the urine often yields good presumptive evidence with regard to the acidity of the stomach contents. They are usually inversely proportional.

Diagnosis and Treatment.

Under this head we may divide gastric disorders into two classes:—1, Those in which the nervous system is chiefly to blame; and, 2, where the local chemistry is mainly at fault. Of course here, as elsewhere, the two classes overlap, and it must be remembered that, although in some cases the local disturbance is due to a general disease, readjustment of the local chemistry is important during treatment of the primary cause. Dyspepsia with chlorosis, as you well know, yields more quickly if both maladies be treated simultaneously, whichever of the two be the original disease. If the local complaint be not seen to, the remedies for the other are certain at first to aggravate it.

It is the local treatment to which I would more particularly direct your attention.

From the foregoing analyses, indications for treatment are given by the amount of the total acidity, and by the amounts of free and combined hydrochloric acid present. The presence, too, of the different organic acids is significant.

If we know the time after food, the character of that food, and the amount of proteid hydrochloride in the stomach contents, we are far on our way towards making a correct diagnosis as to the state of digestion, and therefore towards the knowledge necessary for correct treatment. The secretion of the stomach digests proteids, kills poisonous germs, and subdivides the food so as to avoid intestinal irritation, while it also acts beneficially by bringing the contents to a proper consistency by the addition or subtraction of fluid. If it is unable to digest proteids we can help it; if it digest them too quickly we can retard it. If its controlling action over organisms is deficient, nothing, surely, can be easier than to supplement its antiseptic power.

Deficiency of hydrochloric acid is easily remedied for a time by the administration of some acid by the mouth. By this means the work of the stomach is considerably lightened, while at the same time the cause of the deficiency can be treated, whether it be the diminution of chlorides in the blood, its increased alkalinity, the inflammation of the gastric mucous membrane, or any of the other causes of this condition. This procedure has, I know, been attacked on the ground that by doing the stomach's work that organ loses any incentive to self-help. Surely this must be the argument of one who hopes by applying topical remedies to relieve what is often only the expression of a general state.

Hyperacidity is of two classes,—first, that in which the excess is composed of HCl; secondly, that in which the organic acids predominate.

The first is in many cases the most difficult of all those chemical problems to solve. Both proteids and dilution of the contents with water may subdue the pain. The exhibition of soda only induces the further pouring out of acid. Alkalies are the worst treatment possible for both forms of hyperacidity. Diminution of the chlorides ingested may be of use if persevered in. This excess of HCl is an expression either of some nervous condition or of an abnormal state of the blood. It is proportional; that is to say, that what would be hyperacidity to a chlorotic girl would not be so to a healthy adult. If we cure the chlorosis, having during the treatment attended also to the digestion, an acidity which before would have caused excessive pain and discomfort now only gives rise to those pleasurable sensations which accompany a good meal well digested. In other cases a careful attention to the diet, which should be non-irritating, and to the general condition, is indicated. Frequently the liver is out of order, and a mild hepatic tonic, such as the combination of dilute nitro-hydrochloric acid and taraxacum, helps to improve the state of the gastric secretion. I would wish above all things, in treating such cases, not to be blind to the important relation between the state of other organs and the gastric secretion.

Cases of hyperacidity with excess of organic acids are often, in reality, cases of deficiency of hydrochloric acid, and must be treated as such. Where the stomach is dilated or the seat of chronic gastritis, regular lavage gives the happiest results when combined with other treatment.

Gastric ulcer is generally accompanied by proportional HCl hyperacidity, and may be treated accordingly. Finely divided and bland proteids by the mouth are well tolerated in many cases, the formation of proteid hydrochlorides tending to diminish the pain. Milk should only be given in very small quantities. If the patient be fed by the bowel, the administration of a little grated meat or albumen water by the mouth often stills the pain caused by the reflex secretion of gastric juice.

Washing out the stomach in a case of gastric ulcer is not regarded in Germany or in America as a hazardous proceeding. The only cases on which I would hesitate to practise it are those in which the passage of the tube excites great pharyngeal resistance and nausea. If we lay down a rule of absolute rest in such cases, surely it is inconsequent to insist on passing a tube down a struggling patient's throat. If the pharynx tolerates the foreign body, the danger of the end of a soft india-rubber tube penetrating an ulcer is not great, and the relief experienced often remarkable.

The success that has attended the lavage of children's stomachs for constant vomiting, probably due to fermenting milk, is extraordinary. Dr John Thomson of this city frequently practises it, he tells me, with perfect and speedy success.

I will not presume to say anything to you on the subject of malignant disease of the stomach, further than again to note that if three hours after an ordinary meal no free hydrochloric acid be found in the contents, it is well to give the patient a meal composed almost entirely of carbohydrates,—say some potatoes and butter, or oatmeal porridge. Sometimes even in cancer cases with this diet there may be small quantities of free HCl found; but in health, as I have shown above, the free acidity should largely predominate.

One or two other points I will merely touch upon. The tests for the motility and power of absorption of the stomach walls—Klemperer's oil and Ewald's salol or Günzberg's iodide of potassium tests, may be dismissed at once. I prefer topical examination. Electrization of the stomach walls by means of an electrode passed inside the stomach tube, or in the form of a "stomach bucket," has been much more used in Germany and America than in this country. I have seen only transient benefit result from its use.

It must not be forgotten that very frequently intestinal dyspepsia arises from erroneous gastric processes, and that this form of indigestion is not so easily cured by the exhibition of prompt cholagogue cathartics, or even by the time-honoured blue pill, however much the symptoms may be relieved at the time, as by a careful attention to the disordered gastric digestion. Indeed, this disorder is preferably overcome by appropriate dieting and regulation of meals than by the exhibition of medicine.

To the large class of dyspeptics afforded by women between the ages of puberty and thirty, especially among the upper classes, more salt with their food, more fluid taken during the day, and less chocolate and trash eaten at all hours, are better than much medicine.

Animal life is a chemical problem troubled with a nervous system. The nervous system itself is of a more delicate chemistry, and is controlled by the still more subtle problem of LIFE. We can modify each of these three forces, and attention to each will give the best results.

I do not wish to argue that the modern treatment by lavage, by electricity, by the administration of acids, alkalies, or antiseptics, is indispensable; but I would lay stress on the help which a knowledge of the nature of the gastric contents affords in the correct diagnosis of a case, and in a scientific appreciation of the suitable treatment.

If I might be allowed, in conclusion, to indicate the lines along which a useful discussion might follow, I would suggest a consideration of the importance of the presence and amount of the free and combined hydrochloric acid and of the organic acids in the contents of the stomach, of the treatment of dilatation and ulceration of that viscus, of the signs of cancer and of gastric and intestinal antisepsis. The importance to be ascribed to separate symptoms might also be considered.

I must thank the Royal College of Physicians of Edinburgh for the kindness and generosity which they have displayed to me in allowing me to work in their laboratory, in which, indeed, most of the foregoing analyses were made.

VI.—ON PAROTITIS FOLLOWING OPERATIONS ON THE ABDOMINO-PELVIC ORGANS.

By N. T. BREWIS, M.B., F.R.C.P.E., Lecturer on Gynæcology, Edinburgh School of Medicine; Gynæcologist, New Town Dispensary; Secretary, Edinburgh Obstetrical Society.

(*Read before the Obstetrical Society of Edinburgh*, 12*th July* 1893.)

THE testicle, the ovary, and the breast, as is well known, sometimes sympathise with the parotid gland in the course of mumps. Orchitis occurs as often as once in every sixty cases, and from this fact it may be held as beyond doubt that there is some nerve connexion between the parotid and the above-mentioned glands. The many recorded cases of parotitis subsequent to ovariotomy show that the sympathetic current may be reversed. The following case of suppurative parotitis after laparotomy for removal of the uterine appendages recently occurred in my practice:—

Mrs W., æt. 29, nonipara, married ten years, was admitted into the Cambridge Street Home for Women on the 1st of April 1893 complaining of constant pain in the sides and back. Her symptoms began three months after marriage, and have continued ever since. The pain, which was constantly present, was unbearable at the periods and after slight exertion. She has had frequent and painful micturition from the commencement of her illness more or less up to the present time.

Physical Examination.—Vaginal portion normal; body of uterus acutely bent on the cervix, small, round, hard, tender, and freely movable. Both ovaries were considered smaller than natural. The examination caused great pain.

Diagnosis.—Acute anteflexion, and chronic inflammation of the appendages, probably of specific origin.

Palliative treatment had been tried for some months without any improvement of the patient's condition, so on the 24th May abdominal section was performed and the appendages removed. The omentum was adherent over a considerable surface of the anterior abdominal wall, and required careful ligaturing. There were also pelvic adhesions, which necessitated severe handling of the ovaries. A small sponge was lost, and a somewhat prolonged search was made before it was recovered. In other respects the operation presented nothing unusual. Both ovaries were small and cirrhotic, and the tubes were markedly congested. The patient made a good recovery from the operation. The temperature remained at 99°, except on one occasion,—on the evening of the 25th, when it registered 100°.

On the evening of the 29th (five days after operation) the temperature rose to 100°, and the patient complained of slight soreness in the throat, stiffness, and swelling in the parotid region. A pad of wool was applied over the part, and 5 grs. of quinine ordered to be taken three times a day. On the evening of the 30th the swelling had increased; she complained of pain and deafness, which were evidently due to œdema of the floor of the meatus. From this date till the 6th of June warm boracic fomentations were used; pus was then seen oozing from the ear, the swelling having spread down the neck, over the mastoid process and the infra-maxillary region. Indistinct fluctuation was made out. The meatus was well syringed out with warm carbolic lotion, dusted with iodoform, and covered with a pad of corrosive wool. Three incisions were then made into the swelling by Hilton's method, from each of which thick healthy pus exuded, being drainage-tubes inserted into each. On syringing the upper tube the lotion passed into the meatus through a small opening in the floor, which explained the pus coming from the ear, as before mentioned. A dressing of iodoform gauze was applied. The after-treatment consisted in daily syringing the ear with warm carbolic acid lotion, dusting with iodoform, and dressing with the gauze. By June 13th the temperature was normal, the swelling and pus had nearly disappeared, there was no œdema of the meatus, and the hearing was perfect. The tympanum was found healthy. On June 28th the patient left the Home.

Mr Skene Keith recorded, in vol. xi. of the Society's *Transactions*, a case of suppurative parotitis after removal of an ordinary multilocular tumour of the right ovary. The symptoms in that case were similar to those I have just related. Schröder had five cases of parotid bubo, two of which ended fatally, in 200 cases of ovariotomy. Goodall mentions three examples of parotitis which occurred in his practice. Dr Sutton refers to a case in which one gland after the other began to swell during convalescence after ovariotomy, the patient dying during the third week. Dr Johnston reports a similar case, which resulted fatally on the ninth day. Dr Mann relates two cases; one was fatal with septic symptoms, the other recovered. Drs Baker and Reamy each record a case after Tait's operation. I remember two cases which took place after ovariotomies performed by Dr Macdonald.

The ovary and testicle, however, are not the only organs in sympathy with the parotid, and the latter gland in camels enlarges during the breeding season. The salivation which occasionally accompanies pregnancy demonstrates a nerve bond probably between the uterus and the parotid. Operations on the uterus have been followed by parotitis. Goodall met with a case of suppurative parotitis after incision of the neck of the uterus. Emmet mentions one after an operation for laceration of the cervix. Dr Reamy had a case following hysterectomy; Dr Stephen Paget cites one that occurred after the introduction of a pessary into the vagina, and another that followed circumcision; and Dr Connell records a case of suppurative parotitis after removal of the breast.

While these cases go to show that there is a sympathetic connexion between the salivary glands and the sexual organs, other authentically recorded cases would indicate that the parotid has yet a wider connexion. Instances of parotitis are known to have followed penetrating wounds of the abdomen, the operations of gastrotomy and gastrostomy, the evacuation of an abscess round the vermiform appendix, the operation of lithotomy, and repair of a vesico-vaginal fistula. These cases following injury, not of the genital organs, but of the abdominal viscera and peritoneum, may perhaps show that the relation of mumps to orchitis is not due to any connexion between the salivary glands and sexual organs, but, as Dr Stephen Paget suggests, to sympathy between the glands at the commencement of the alimentary canal and the peritoneum.

In conclusion, I think we may regard the parotitis which comes on after operation in the sexual and abdominal organs as the result of a reverse sympathy; that cases which run through a course like mumps, ending in resolution, are due to this nerve connexion alone; but that those cases which suppurate while sharing the sympathetic relation, must, from the number of fatal results which occur, be regarded as involved in septic intoxication. In suppurative cases which do not terminate fatally, we may consider that the septicæmia has exploded in the parotid glands.

VII.—NOTES ON A CASE OF TETANUS.

By J. W. Dowden, M.B., C.M., and Alexander C. Houston, M.B., D.Sc.

Clinical Notes by J. W. Dowden (by kind permission of Mr Cotterill).

J. R., male, aged 12, residing in Edinburgh, was admitted into Ward 5, Royal Edinburgh Infirmary, July 4th, 1893. The complaint was wound of the left foot and spasms of the body, the duration of the wound being sixteen days, and of the spasms about thirty-six hours.

The family history was very good, as was the boy's personal history; he was well fed, and led an active outdoor life; in warm weather running about barefooted; frequently he was to be found playing in a stable close by. There had been an epidemic of scarlet fever and measles in the neighbourhood, but he escaped. The history of the boy's complaint was, that about sixteen days before admission, while walking on the beach at Cramond, the sole of his left foot was scratched, and as he was noticed to limp about three days later, a poultice was applied over a slight wound on the sole of the left foot, and shortly after a piece of dirty rusty iron, about ½ in. long, was removed; these three days previous to poulticing, he had been running about in his bare feet, but after the iron was extracted he wore boots. For the next ten days he ran about, and appeared perfectly well, three days before admission going off to the Canal barefooted to fish. Next evening, July 2nd, he was dull, shivering, with loss of appetite, while the left foot was swollen and red lines extended up the leg. On July 3rd a doctor saw him, and extracted another piece of dirty iron about an inch long, the foot becoming easier; but he began to complain of pain in the back of his neck and right side; he was also sick. July 4th he looked pinched and ill; the foot, however, was clean and healthy looking, all redness having disappeared. The back of his neck was stiff, and his teeth were tightly clenched, while he occasionally had sudden general stiffening, with pain. As he rapidly got worse, the doctor sent him into the Infirmary.

The state on admission was one of general tonic spasm in a thin, pale boy; retraction of the head and risus sardonicus were well marked, while the rigid body was bathed in perspiration. At the ball of the left great toe there was a wound about one inch deep passing up and towards head of first metatarsal, and there were some enlarged painless glands in the left groin. He was perfectly sensible. Temperature, 98° F.; pulse, 70; respirations, 22. Some hours after admission he had a most marked attack of opisthotonus, his vertex and heels alone touching the bed, and a little later he had three other attacks even more marked; consequently his foot was amputated by Professor Syme's method about 4 A.M. on the 5th July. The original wound in the foot extended deeply towards the head of the first metatarsal, and the sheath of the long flexor had been opened. Chloral in 10-grain doses was given every three hours, while brandy and egg, beef-juice and milk were frequently administered. Nothing of note was to be found in the circulatory or respiratory systems; the urine was loaded with amorphous urates, but otherwise showed nothing abnormal.

July 5.—He had no more severe spasms; only occasional startings, with momentary stiffening of the abdominal muscles. He could separate his jaws about half an inch, and speak rationally and distinctly. He was in great dread of the slight startings he had. In the morning, temperature was 98°·4, pulse 100, respirations 28; in the evening, temperature 100°, pulse 100, respirations 24.

July 6.—Pulse was weaker, otherwise appeared better. Chloral was stopped, and as he complained of severe pain in the back, an ice-bag was applied with marked relief. Nourishment was well taken; no vomiting. Towards evening he had a very severe spasm, in which he got cyanosed. In the morning, temperature 100°, pulse 100, respirations 28; in the evening, temperature 102°·4, pulse 110, respirations 40.

July 7.—The stump was dressed during the night as the discharge showed, and ¼ gr. morphia suppository was given to quiet the spasms, which had become more severe and more frequent. The patient continued to take his food well, but his pulse remained feeble, and his appearance was unsatisfactory. Perspiration was very free, while the spasms became more marked in degree and number. Inhalation of chloroform and administration of morphia had but little effect, and he died suddenly in a spasm about 6 P.M. In the morning, temperature 102°·8, pulse 138, respirations 38; just before death, temperature 105°, pulse 128, respirations 38. The temperature rose to 106° after death, and rigidity continued well marked. No post-mortem was obtained.

BACTERIOLOGICAL NOTES BY DR A. C. HOUSTON.

(*The work was done in the College of Physicians' Laboratory.*)

Within recent years our knowledge of the cause of tetanus has made great advances. In 1884 Nicolaier produced artificial tetanus in animals by inoculation with earth. He found bacilli of a peculiar and characteristic shape in the neighbourhood of the wound, but he was not able to breed them pure or to demonstrate directly their existence in the soil. Carle, Rattone, and Rosenbach, however, have lately placed the infectious nature of the disease beyond the range of doubt. Kitasato (in 1889) obtained pure cultures of Nicolaier's, or of a similar micro-organism, by an ingenious modification of the usual method of cultivating bacteria. He found that in anærobic cultivations from the seat of the wound in cases of tetanus the tetanus bacillus formed spores sooner than the other bacteria with which it was associated. By heating the mixed cultures to 80° C. those micro-organisms which had not formed spores were destroyed. In this way pure cultivations of the tetanus bacillus were obtained. Kitasato and other investigators have shown that the so-called tetanus bacillus must certainly be regarded as the specific agent in the production of tetanus. Nevertheless some degree of obscurity still surrounds the subject, because many workers have failed to produce tetanus with pure cultivations of the bacillus, or with pus, from cases of tetanus. Hence any addition to our knowledge of the subject, however small, or any confirmation of the work of others, is of importance. For this reason, it is hoped that the following account may be of interest.

Pieces of tissue were taken from the seat of the wound after the foot of the boy whose case is described in the clinical notes had been amputated, and imbedded in agar in the following way:—A number of test-tubes, each containing 10 cc. of agar, were boiled for half an hour to expel the oxygen. Some of these tubes were rapidly cooled to 50° C., and the pieces of tissue added to their still liquid contents. After cooling still further, boiling agar from the remaining tubes was poured on the top of the agar thus inoculated, and the tubes quickly cooled with the aid of running water until solidification had taken place. By this means the pieces of tissue were imbedded deep down in the nutrient medium under anærobic conditions. The cultivations thus made were incubated at the temperature of the body. On the following day a copious anærobic growth was noticed, the agar being split up and fissured in all directions with the development of gas. One of the tubes was broken into a sterilized Petri's dish, and its contents examined microscopically. The smell given out by this and subsequent cultivations was very disagreeable. The microscopic examination showed the presence of several different kinds of micro-organisms (Fig. 1). There were a great many bacilli, rounded at their ends, and often so short as to be almost oval in shape. Micrococci, sometimes occurring in chains and sometimes in irregular masses, were also noticed. But the interest of the cultivations lay in the fact that thread-like and motile bacilli were observed which bore a striking resemblance to the tetanus bacillus described by Kitasato.

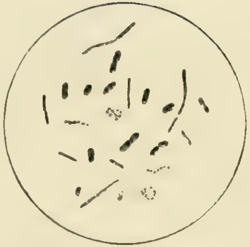


FIG. 1.—Magnified 700 diameters.

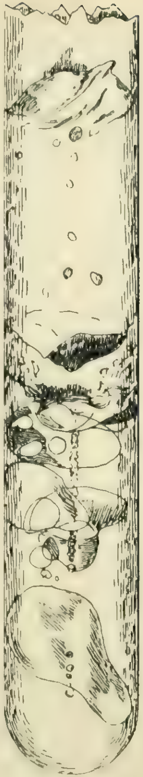


FIG. 5.

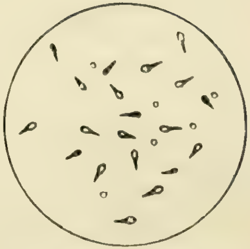


FIG. 2.—Magnified 700 diameters.

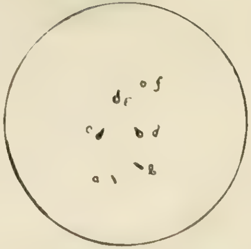
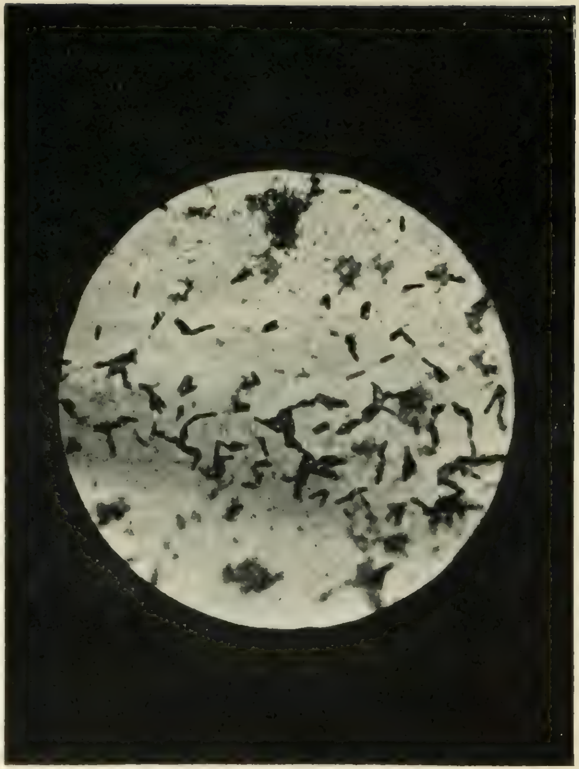


Fig. 3.—Magnified 700 diameters.



Micro photograph magnified 700 diameters.

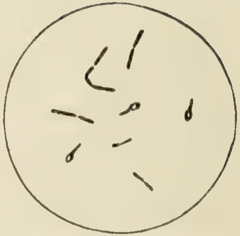


Fig. 4.—Magnified 700 diameters.

No spore formation was, however, visible, so that it became necessary to break open other tubes at intervals of several hours. In less than two days, but after more than one day, drumstick spore formation was detected (Fig. 2). Fresh cultivations were immediately made from the tube, the contents of which showed spore formation. The same precautions to exclude the oxygen of the air already described were taken, but after the cultivations had been made the tubes were heated to 80° C. for ten minutes to kill the other bacteria which had not formed spores. After incubation a decided anærobic growth again took place. To make certain of the purity of the cultivations, fresh tubes were, after a little less than two days' incubation, again inoculated, their contents being heated to 80° C. as before. From these latter cultures further cultivations were made until the micro-organism had been carried through four generations. As a result of this method devised by Kitasato, a microscopic examination of the cultivations showed the presence of characteristic rods thickened towards one end, and usually containing a gleaming circular or oval spore lying in the centre of the swollen portion[1] (Microphotograph). Free spores could also be detected without difficulty, but no other micro-organisms were visible, even under the closest scrutiny.

A mouse inoculated subcutaneously with one of these pure cultivations sickened and died in three days, but without, so far as could be observed, showing tetanic symptoms. On examination after death no pus could be seen at the seat of the wound, and the internal organs appeared healthy. Anærobic cultivations, however, were made from the seat of the wound in the way that has been already described, and with the result that the same characteristic micro-organism was again isolated.

The point brought out in the clinical notes—that the boy was playing about stables with a wound in his foot—is of great interest, because Verneuil and other French authorities consider that the disease arises only in those who have been brought into contact with horses or their surroundings.

Taking into account the clinical history of the case, the characters of the described micro-organism, the death of the mouse after inoculation, and the isolation of the same bacillus from the seat of the wound, it seems justifiable to conclude that the boy died of traumatic tetanus due to the vital activity of this microbe, which appears to be similar to, if not identical with, the bacillus of Nicolaier and Kitasato.

While working at the bacteria in soil in the Public Health Laboratory of Edinburgh University the writer isolated two anærobic micro-organisms which have certain points of similarity to the tetanus bacillus. Their description will not be out of place in connexion with this case.

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[1] The reproduction of the microphotograph unfortunately does not show the circular or oval spores as clearly as they appear in the microphotograph itself.

A description, in tabular form, of two Anærobic Micro-organisms isolated directly from Soil, which bear certain points of resemblance to the Tetanus Bacillus.

No. 1. Anærobic Drumstick-shaped Bacillus.	No. 2. Anærobic Drumstick-shaped Bacillus.
(A.) *Morphological Characters.*	
Small thin rods with pointed ends, usually occurring singly.	Rods longer and thicker than No. 1, with rounded ends, and usually united together to form chains.
Actively motile.	Actively motile.
Drumstick spore formation well marked; the rods thicken towards one end (Fig. 3, *b*, *c*), and a bright gleaming spore makes its appearance in the centre of the rounded portion (Fig. 3, *d*, *e*). Later, the spore becomes separated from the rest of the rod (Fig. 3, *f*).	Drumstick spore formation well marked; the spores, however, as well as the swollen ends of the rods, are oval rather than round (Fig. 4).
The above developmental changes cannot be followed in hanging-drop cultivations, because in the presence of oxygen this micro-organism rapidly loses its vitality. Stained cover-glass preparations, however, always show the presence of—(1), rods; (2), rods with swollen ends; (3), rods with drumstick spores; and (4), free spores.	
(B.) *Biological Characters.*	
Strictly anærobic.	The same as No. 1.
(*a.*) *Growth—in gelatine roll cultures in Roux's tubes by Roux's method—in a partial vacuum, the residual gas being hydrogen.*	
Macroscopic appearances.—The gelatine is not liquefied. The deep colonies appear as small globular growths of a yellowish colour. The surface colonies spread out to form small flat white colonies, with usually a sinuous outline. The central portion is slightly yellow.	Macroscopic appearances.—The gelatine is liquefied. The colonies appear as ill-defined white growths lying in little pools of liquefied gelatine.
Microscopic appearances (under a low power).—The deep colonies focus as if globular, and are dark brown in colour. The surface colonies show a dark central nucleated portion; from this outwards the colour fades from a light yellow to a transparent grey. The border is sinuous, but unbroken in character.	Microscopic appearances (under a low power).—The colonies are greenish-brown in colour, with a delicate fibrous structure resembling little tufts of moss. The details of the growth are soon lost, owing to the liquefaction of the gelatine.

(*b.*) *Growth in bouillon in Roux's tubes under anærobic conditions.*

The liquid becomes uniformly clouded, but without any formation of a pellicle. After a time a white cloudy mass settles at the foot of the tube, leaving the fluid above quite clear.	Practically the same as No. 1.

(*c.*) *Growth in puncture cultivations in grape sugar gelatine.*

(*Puncture cultivations made in the ordinary way remain sterile. When the following precautions are taken characteristic growths are obtained. The gelatine is heated to* 100° *C. for twenty minutes, and cooled as rapidly as possible. When solid a puncture cultivation is made, and gelatine which has been similarly treated, but which is still liquid, poured on the top.*)

The line of the puncture is marked by the growth of little white, more or less confluent globular colonies (Fig. 5). A great development of gas takes place, with the result that plate-like fissures extend throughout the substance of the nutrient medium, and the upper part of the gelatine above the puncture is usually torn from that below and driven upwards. The pressure of the gas sometimes causes the surface of the gelatine to become convex instead of concave. The gelatine is not liquefied.	A white cloudy growth develops along the line of the puncture, which, when examined very minutely, has the appearance of being composed of numberless excessively fine white hairs. A marked development of gas takes place, with the production of fissures and gas spaces throughout the substance of the gelatine. The gelatine is liquefied, so that the details of the growth are soon lost, the medium being converted into a turbid, foul-smelling liquid.

(*d.*) *Odour attending cultivations.*

Cultivations of this micro-organism give rise to a very unpleasant smell, somewhat resembling sulphuretted hydrogen.	Practically the same as No. 1.

(*e.*) *Inoculation of animals with micro-organisms.*

Guinea-pigs were apparently unaffected by inoculation with cultivations of this micro-organism.	As regards guinea-pigs, the same as No. 1.
Two mice out of four which were inoculated died, but without showing tetanic symptoms.	Two mice out of three which were inoculated died, but without showing tetanic symptoms.
The results of these inoculation experiments may have been due to attenuation, as the cultivations were carried through several generations to make certain of their purity before the inoculations were made. It is interesting in this connexion to note that some authorities hold that the purer you breed the tetanus bacillus the less likely is it to produce tetanus.	The same remarks as to the results of the inoculations apply here as in the case of No. 1.

VIII.—WHAT IS THE BEST TREATMENT OF DIPHTHERIA?

By KEITH NORMAN MACDONALD, M.D., Surgeon to the Gesto Hospital, Skye.

THE dreadful state of therapeutics at the present day—I mean as regards the superabundance of remedies and their supposed virtues—is not only enough to make one's hair stand on end, but to produce softening of the brain in the luckless individual who tries to master the details of countless agents, many of which are potent for good or evil, and the cry is, "Still they come." Equally alarming is the counsel given in some standard works as to the danger and uselessness of certain remedies which experience has well-nigh proven to be of much service in diphtheria.

Between two such extremes it is always safe practice to steer a middle course. The enthusiast who finds many therapeutic agents "act like a charm" is sure to create doubt and discontent in the minds of others when these remedies fail, as they often must do, at the bedside. As the late Sir William Gull once remarked, new remedies should be tried well before their virtues begin to flag, which generally happens after a few months. He might have added that the *vis medicatrix naturæ* gets no credit under the use of the latest specific out. Notwithstanding all this, however, there can be no doubt that many of our new medicines are really efficacious, though I deprecate the almost entire exclusion of the official pharmacopœial preparations by the rising generation of practitioners, and even by some consultants, who are too ready to run after something new that has just been tried at Berlin, or Bolivia, the virtues of which are much enhanced by the ignorant if the said remedy has to be procured from London or some distant city, the natural inference being that the patient—when a consultation has been held—was not treated properly before; or, in other words, the attendant must have been ignorant of the existence and virtues of a remedy so promptly and so confidently prescribed by a greater man.

In opening a well-known standard work on the Practice of Medicine some time ago I found the following under the head of the local treatment of diphtheria:—"Powerful astringents are also made use of, such as tincture or solution of perchloride of iron, mixed with an equal proportion of glycerine. The liquids are applied by means of a brush. Most practitioners at the present time are decidedly averse to the use of these agents in any form. If they are employed at all, it should only be at a very early period, the application being thoroughly and efficiently made, around as well as over the membranous patches. It is really difficult to determine whether this treatment is positively beneficial, and it certainly may do much harm, while its repetition at more or less frequent intervals, as recommended by some, is decidedly mischievous." The above quotation does not, of course, bind the writer of it to any particular line of treatment. He is rather giving a summary of the local treatment of the disease by others; but if he agrees with it, I pity both the author and the "most practitioners" alluded to.

There is such a thing as common sense, and I can scarcely imagine any practitioner using any of these remedies in a reckless fashion, as I believe that few intelligent men at the present day would persistently persevere with any remedy that did not show some measure of success after a few applications, or, at any rate, after a day's trial.

I much prefer the philosophic words of wisdom uttered by the late Sir Thomas Watson, who in his introductory lecture[1] remarked,—"Doctrines and maxims, good or bad, flow abroad from a public teacher as from a fountain, and his faulty lessons may become the indirect source of unspeakable mischief and suffering to hundreds who have never even heard his name. These thoughts fill my mind with an almost painful sense of the obligation imposed upon me by my present office of clearly sifting the facts and meditating carefully the precepts which I offer for your instruction and guidance." Sentiments like these make one think, and hesitate before accepting or condemning any particular line of treatment.

That most, or all, of our approved remedies will prove unsuccessful in many cases is undoubted; but I have a shrewd suspicion that in diphtheria a great deal depends on the manner in which remedies are used and our instructions carried out, especially in private practice. The medical attendant who only sees his patients once a day, and trusts to others—and these, as a rule, unskilled persons—to carry out any particular line of treatment, is pretty sure to have a high percentage of unsuccessful cases in overcrowded and insanitary localities, where hygienic conditions cannot be well carried out, and where the disease often runs a rapid course with great malignancy; but that by no means lessens the importance of early recognition and early treatment.

Of two evils it is, of course, best to choose the least, and to do too little than too much. That every one must recognise. In this respect the most baffling cases are those which occur in children, where local and constitutional remedies can only be partially employed. Indeed, with them the greatest patience and gentle handling is necessary. To treat children properly one must love them. Though I by no means approve of too much specialism in medicine, I hail with satisfaction every new specialist in children's diseases who raises his head above the ordinary crowd. Every one must be led more or less to accept or reject remedies in the treatment of this disease according to his own experience, reading, and knowledge of therapeutics. Why, for instance, I place little reliance upon nitrate of silver, tannin, and alum powders blown into the throat, gargles, carbolic acid, and Condy's fluid (except as disinfectants), phosphate of soda, borax, syrup of chloral, tolu, sulphocarbolates, salicylic and boracic acids, sulphur, benzoic acid, and several others, is simply because I don't believe in them, and it would be waste of time trusting to their feeble qualities. I cannot say much about intubation, as I have not tried it, but I have no doubt it will go the way of all things mortal at no distant date.

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[1] See Sir George Johnson's paper on "The Therapeutics of Cholera," *Lancet*, October 1892.

From long thought and much reading, the remedies, then, on which I mainly rely in the treatment of diphtheria are as follows:

When the case is a mild one, I am content with mild measures: an aperient, hot fomentations to the throat, the steam of hot water or lime-water, and the spray of lactic acid, ʒiij. to ℥viij. of lime-water or sulphurous acid, ʒj. to the ℥j. of water, a chlorate of potash drink, and a diet of milk and beef-tea. But when the case is at all severe, in addition to the above measures I give quinine and iron internally. Indeed, in most cases I administer them as a measure of precaution, and it is not necessary to give them in heroic doses,—from 1 to 5 grains of the former, and 15 to 20 minims of the tincture of the perchloride every four hours, according to the age, severity of the case, and the amount of febrile disturbance present, and locally I apply a solution of equal parts of the tincture of the perchloride of iron (or a weaker solution of the liquor ferri perchlor. fort.), and glycerine every four hours, or only three times a day if the local affection is not spreading rapidly. At the same time I use the lactic acid and sulphurous acid spray alternately several times a day, and burn sulphur in the room, at least morning and evening, besides using carbolic acid, chloride of lime, and Condy's fluid,—the latter in a pail of water for soaking spoons, cups, etc., in after being used by the patient; all rags burnt, and discharges thoroughly disinfected. Many have more confidence in lactic acid, both as a spray and applied with a brush, but I am sure I have seen just as much benefit from the sulphurous acid, and it can be given in 20 minim doses or more internally as well. When more than one case occurs in a house, as I have had recently, the respective merits of several remedies can be compared, and I am sure that the free use of disinfectants tends to weaken the virulence of the poison before it has gone through a whole family. In none of my cases did I notice any bad effect from the iron applications. A strong spray of the sulphurous acid produced a fit of coughing on several occasions, but beyond that I had no cause of complaint.

In the case of children, where the steel and glycerine cannot be applied properly, I trust to the sprays, and give sulphurous acid in 10 minim doses internally as well, in water sweetened with glycerine. Gargles are of little use in adults, and inadmissible for children. In every case the practitioner should direct the person in attendance to apply both the solution and spray in his presence and under his guidance, otherwise it will not be done, or done very imperfectly, and thus a valuable life may be risked, or lost, through ignorance and carelessness on the part of unskilled persons.

Looking to the pathology of the disease, many argue that a specific poison in the blood cannot be eliminated by local treatment. I am rather inclined to this view also, and do not depend entirely upon the local remedies. No doubt the cacoplastic lymph deposited in the throat is a manifestation of the general poisoning of the system in the first instance, and not, as Trousseau taught, the absorption of poisonous material from the false membrane.[1] But from the researches of Pasteur on the diphtheritic virus the local affection cannot altogether be ignored. This authority, "after cultivating the microbe, filtered out the liquid secreted by it, and by the action of porcelain filters separated the micro-organism completely from its own secretion. This latter was able to produce all the symptoms of diphtheria down to the paralytic phenomena. It would appear, then, that the microbe, living upon a mucous surface secreting a deadly poisonous substance, which is easily absorbed into the system, must become a serious local danger, and must be grappled with."[2] At any rate, keeping down the false membrane seems to lessen the toxic effect of the *materies morbi* of the disease, hence the importance of local applications and the free use of nourishment and stimulants. Milk and beef-tea should be peptonised, and rectal feeding resorted to when the power of swallowing is limited. As a rule, very little nourishment can be taken; then, of course, we are almost dependent upon supporting the system by enemata, which I have seldom found very satisfactory.

Regarding the local action of remedies upon throat affections, I had a case in June 1891 which well illustrated the value of topical applications. It was that of a servant girl, aged 30, that was sent to the Gesto Hospital from a country house. She had been complaining of headache, lassitude, and general *malaise* for about ten days before I saw her. I happened to know that rats had been poisoned in the house some months previously, and noticed a horrible stench about the place. To my great horror, a confinement also came off in the same house, but as it was a large one, with lots of corridors and long passages, I ordered as many windows to be kept open as possible, and with the sedulous use of disinfectants no untoward event happened; but when the servant was sent to hospital I immediately suspected some mischief, as her complexion was quite dusky, her pulse 120, and her temperature 102° F. I examined her throat, and found some diphtheritic patches on both tonsils and at the back of the fauces. As I could not admit a case of the kind—this not being a hospital for infectious cases—I sent her at once to her parents' house, some two miles off, and formed an unfavourable prognosis of the case on the spot. She ultimately died on the 4th of July, eighteen days afterwards, from extension of the disease into the trachea and bronchi.

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[1] Quain's *Dictionary of Medicine.*

[2] *Dictionary of Treatment*, by William Whitla, M.D.

In this case I noticed that when I applied the perchloride of iron and glycerine myself she was always better at my next visit than when I entrusted it to the friends, but invariably had a bad night, as the remedies were almost entirely neglected by her simple, ignorant people. When the remedies were applied twice a day by myself, the patches cleared wonderfully, and I had faint hopes of recovery, but as neither the lactic nor sulphurous acid sprays were applied properly during my absence, the disease gained ground. A patch the size of a threepenny piece formed on the lower lip and all over the roof of the mouth, which nothing could effectually remove. I tried iodoform, oil of turpentine, and eucalyptus oil, but all were objectionable on account of their disagreeable odour, and the case, as already stated, ultimately proved fatal. Disinfectants having been freely used, no other case occurred in the house ; but I have since thought that if a skilled nurse had been in constant attendance, who would have carried out every particular item of the treatment properly, she might have recovered.

Poor people have always an objection to carrying out any line of treatment that is at all troublesome, or distasteful to the patient ; not only the medicinal part of it, but the stimulant and nutritive portions also. I was more successful recently in a case where a labouring man, a shoemaker by trade, aged 30, and married, had been working at the West Highland Railway during the summer, and returned to Skye on the 20th of July. Though feeling slightly indisposed, he undertook some work at Dornie, near Strome Ferry, but after being away for a fortnight he returned home, and had some rigors after a long drive by the mail coach. I saw him on the following day, the 5th of August ; but he did not then complain of his throat. His temperature was 100° F., and his pulse 112 in the minute. While waiting for a diagnosis I administered some quinine and antipyrine tablets, and gave some castor oil as an aperient. He complained of pain in his back and joints, with great lassitude, drowsiness, and weakness. No further symptoms having developed, I examined his throat, and found some dirty-white patches at the back of the fauces. As no one had been ill, so far as he knew, in either of the localities where he had been working, it was impossible to trace the source of infection. This man's case was very bad, and he nearly died of it. Indeed, I believe he would have died had I not been visiting him three and four times a day, and applying the local remedies myself. His urine was also slightly albuminous, and his case was complicated with bronchitis. The diphtheritic patches, which encroached upon the roof of the mouth, seemed rather rebellious to treatment, but with the steady application of the perchloride of iron, lactic and sulphurous acids, he ultimately pulled through.

The only bad effect produced by taking so much iron and quinine was that severe constipation set in, which was very troublesome. No sooner did he recover, and while staggering about the only room in which he and his family lived, than his wife and the eldest child, aged 5 years, became ill, notwithstanding the free use of disinfectants,—viz., chloride of lime, carbolic acid, Condy's fluid, and sulphur vapour. However, as no change of linen or bed-clothes could be had, it is not to be wondered at that the whole family should become affected. The eldest child's case was also rather alarming. Her temperature rose to 104° F., and remained at that point for three or four days, with a slight decline of only 1 degree in the mornings. Her abdomen became slightly swollen and tympanitic, and she bled slightly at the nose, but the nasal affection was not so bad as some cases I have seen recover. On only two or three occasions did liquids being swallowed return through the anterior nares. The throat was very bad, and in her case the poison must have acted or developed rather slowly, as she had been indisposed for ten days before the patches appeared, and in her mother's case a fortnight. The case of the latter and that of the youngest child, aged 2, was of a milder type, which might have been owing to the action of the virus having been weakened by the constant use of disinfectants.

The same treatment was adopted almost in all the cases, and, I am thankful to say, successfully. It is worthy of remark, however, that if these cases had occurred in separate families, and in localities where removal to a hospital for infectious diseases might be urgent, it would be difficult for the first ten days to say from what disease they were suffering.

My cases having occurred as they did, I was prepared for eventualities, and treated them accordingly. Fortunately, the cases were not far from the Gesto Hospital, from which all necessaries were promptly supplied, the parochial authorities being too much bound down by red tape to be of much use in an emergency when called upon to render assistance. The house also was a wretched one,—only one habitable sort of room for the whole family, with an earthen floor, damp walls, and leakage all over the place, peat-reek in abundance; the only redeeming point about it was that the doors being so rudely made and badly fastened, the ventilation was almost excessive, cold draughts of damp air being constantly playing upon the patients as they lay in bed. Such are some of the difficulties and dangers to be met with amongst the wigwams of the Highland crofters,—dark and gloomy and damp within, dirty and muddy without, fomites for the preservation and propagation of zymotic diseases in every nook and corner, and anything but an apology for cleanliness almost impossible. Sights of this nature, once seen, are never forgotten, and it need hardly be said must be very irksome to the hard-worked parochial medical officer of a Highland parish, with his miserable pittance of a salary for skilled labour. All he can ever hope for, under such circumstances, is the comfort attached to the beautiful and consoling words, "I was sick, and ye visited me."

IX.—ON VARIETIES OF THE APPENDIX VERMIFORMIS, CÆCUM, AND ILEO-COLIC VALVE IN MAN.

By John Struthers, M.D.

(*Continued from page* 306.)

II. Specimens showing Variation of the Appendix, Cæcum, and Ileo-colic Valve.

These specimens were fairly distended before being dried, and are opened as far as necessary to show the ileo-colic valve, mouth of the appendix, and other characters of the interior. The explanation of the Plate may be referred to in connexion with the description of each of the specimens here mentioned as figured. In the specimens figured, and, indeed, in the whole of my specimens, the cæca are referable to the two forms, the tapering or funnel-shaped form, and the bluntly conical or bulbous form. With each of these forms of cæcum the appendix may be in various conditions. As the last stage of the appendix is generally loosely movable, it has to be kept in mind that, in preparations, the direction of this stage is sometimes determined by the exigencies of space. The Table may be referred to for a general indication of the chief characters of the specimens, and for some comparisons. The descriptions may seem too detailed, but it is when critically studied that such specimens become really interesting.

(*a.*) *Fœtal Specimens.*

No. 1. From fœtus supposed to be near the full time. Cæcum tapering. Appendix long.

The representation of the fœtal cæcum and appendix given in fig. 1 is mainly from this specimen, but these parts no doubt vary at this period. In this specimen, placing the colon vertically, the tapering cæcum bends downwards and inwards, so that the anterior wall of the upper part (base) of the cæcum, when viewed sideways, is seen to have already begun to form a future fundus. But on all aspects the cæcum presents an elongated tapering form, its general direction inwards and downwards. It is more elongated than in the figure ; length over $\frac{1}{2}$ inch and equal to about twice the diameter of the base or that of the colon. Although the cæcum is very tapering, the point of commencement of the appendix is recognisable. As now placed, the appendix first bends with concavity upwards for about $\frac{1}{3}$ of its length, then sharply downwards with the remains of its mesentery, and shows finally two more gentle curves. Total length 1 inch ; diameter, at the middle, about $\frac{1}{10}$ inch. Diameter of colon and of base of cæcum about $\frac{1}{4}$ inch ; that of end of ileum nearly the same. Ileo-colic valve not exposed.

No. 2. From fœtus known to be of the full time. Cæcum transitional. Appendix long.

Translucent preparation showing all the parts well. Diameters, of ileum, $\frac{3}{8}$ inch ; of colon and of base of cæcum, $\frac{1}{2}$ inch ; of appendix, at middle, $\frac{1}{8}$ inch. Cæcum, as seen from the side, a wide bent cone, turned backwards and inwards, the apex finally tilted a little up, so that the apex is behind the middle of the ileum. Cæcum about $\frac{3}{4}$ inch in length ; not nearly so tapering as in last specimen ; is rather a moderately bent wide cone turned backwards and inwards. *Appendix* about $1\frac{3}{4}$ inch in length, begins abruptly from the rapidly contracting apex of the cæcum and turns sharply upwards. As now placed, this long appendix is directed entirely upwards, at first behind the end of the ileum, then upwards and outwards behind the colon for a length equal to fully twice the diameter of the colon. But the part now placed behind the colon has probably been the pendulous part laid up there for convenience owing to its great length. On the whole the appendix diminishes a little and gradually in diameter; on the proximal third the diameter averages more than ⅓ inch, on the distal third less than 1/10 inch. Ileum of medium obliquity upwards; area of junction ovoid. *Ileo-colic valve* well-formed; lower flap the broadest; upper flap slopes downwards considerably; posterior frænum long and with moderate obliquity downwards and outwards; anterior frænum short; orifice as usual in adult, direction a little upwards and outwards, lower edge the most concave. What appears as the opening of the appendix is a wide aperture, about ⅔ the size of the ileo-colic orifice, external to the lower half of the ileo-cæcal flap, bounded by a sharp crescentic edge above and internally. This opening is into what appears externally as the curved apex of the cæcum, not into the appendix proper. In some of the adult specimens this condition remains, represented by an intermediate vestibule. Looking at the cæcum from the front, the appendix springs from the inner and upper part of the back of what appears as a bluntly conical cæcum. The fundus is already fully formed by the bulging forwards and downwards of the anterior wall of the cæcum. The anterior longitudinal band is visible on the colon, but there is no sacculation on the cæcum and very little on the 1½ inch of colon present.

This specimen shows, in a fœtus, the usual adult form of cæcum nearly attained. It required, further, only the flattening of the original apex at the back, represented in the adult by the vestigial fossa enclosing the orifice of the abruptly arising appendix.

(*b.*) *Adult Cæca of the Tapering or Funnel form.*

No. 3. (Fig. 5.) Cæcum retaining the fœtal form, with wide Appendix. Ileo-cæcal valve imperfect.

This cæcum is, relatively, even narrower and shorter than in the usual fœtal condition as represented in fig. 1. Sex and age not noted, only that it was adult. Greatest diameter of colon, 2 inches; of cæcum, at base 1, at apex ½ inch. Length of cæcum proper, 1¼. *Appendix*, length 3 inches; direction, first inch continues the inward and downward course of the cæcum, then abruptly turned backwards by its mesentery, which crosses here in front. From this crossing being in front, it might be inferred that the turn backwards here was artificial, and that the pendulous stage had been forwards; but the surface behind has no appearance of having been twisted. Appendix wide, diameter about ⅓ inch at middle, more at first stage, tapering a little towards the bluntly pointed end. Oval-shaped mouth of appendix marked by a narrow valvule at the upper end, but mouth nearly ½ inch wide on its long axis, and in direct continuation with axis of cæcum. The contents of the cæcum could not but pass into the appendix, especially in the erect posture.

Ileo-colic valve unusual. Ileum very oblique upwards. Height of area of junction 1¾. Ileo-colic flap nearly normal, breadth ½ inch, much inclined downwards; ileo-cæcal flap appears only as the upper straight edge of a septum between the orifice and the mouth of the cæcum, the septum antero-posterior and directed upwards and outwards; height 1 inch, antero-posteriorly ½ inch. Looking down on them, two large apertures are seen, the external the rounded mouth of the cæcum, about 1 inch in diameter, marked off behind by the short and very little projecting posterior frænum (length ½ inch, breadth 1/12); the internal the irregularly oval ileo-colic orifice, fully ¾ by ½ inch, looking outwards and upwards. The two boundaries of the ileo-colic orifice do not meet by ½ inch, the interval completed by anterior wall of cæcum. It appears that this valve could not be efficient in preventing regurgitation, the ileo-cæcal flap virtually wanting as a valve, represented only by a fixed septum, while the slanting $\frac{1}{2}$ inch-broad ileo-colic flap is attached to the colon over an inch higher up. Towards its end the *ileum* is enlarged to an average diameter of $1\frac{1}{4}$ inch. At about 2 inches from the end it presents a marked constriction externally and a well-marked valvule internally, $\frac{1}{4}$ inch broad at the middle and going round $\frac{3}{4}$ of the circumference. The same occurrence is noted with No. 12, and with No. 13.

It is rare to find *valvulæ conniventes* so low down in the ileum. According to my observation ("On Diverticula from the Small Intestine," *Edin. Med. and Surg. Journal*, 1854) these folds become slight and scanty at the beginning of the lower third, and are usually absent in the lower fourth of the small intestine. Variations in regard to this are probably not much noted in the dissecting-rooms, but it becomes an interesting point in view of the fact, as far as known, that, except in the ornithorhynchus, the occurrence of valvulæ conniventes in the small intestine is peculiar to man, as among the adaptations of the abdomen to the erect posture. The valvulæ conniventes are said not to appear till late in uterine life, and to be but rudimentary at birth ; the ileo-colic valve at the third month of uterine life ; sacculation of the large intestine not till the latter half of uterine life.

No. 4. (Fig. 6.) Large conical and tapering vertically-directed Cæcum, with continued Appendix blocked. Ileo-colic valve imperfect.

From a male subject aged 43. Length of cæcum $4\frac{1}{2}$ inches. Greatest diameter of cæcum, at middle, 3 ; of colon, 2 ; of ileum, $1\frac{3}{8}$ inch. The wide conical cæcum diminishes on its lower half uniformly to a diameter of about $\frac{1}{2}$ inch, and then, on its last half inch, tapers rapidly to the pointed apex. The longitudinal bands are not seen on the thin translucent walls of this cæcum. *Appendix* begins without constriction externally and without appearance of valve internally, is fully 2 inches in length and appears to have been pendulous ; is now shrivelled and narrow, blocked by matter that has prevented inflation. The contents of the cæcum could hardly fail to pass into this appendix. *Ileo-colic valve :* Ileum directed a little downwards ; height of area of junction $1\frac{3}{8}$; valve resembles a pyloric curtain and orifice much more than the normal valve. Orifice vertically oval, $\frac{11}{12}$ by $\frac{5}{12}$ inch, and looks almost directly outwards. Breadth of posterior valvular fold (ileo-colic) $\frac{1}{4}$ inch, of anterior less. The two run into each other below without frænum, and meet above at the sharp end of the ovoid orifice. Curtain nearly at right angles to wall of ileum, its inner surface in line with wall of great intestine. It is not evident how such a valve could be competent to prevent regurgitation, without a sphincter muscle like that of the pylorus.

No. 5. (Fig. 7.) Full-sized conical and tapering Cæcum, curved inwards, with continued Appendix blocked. Ileo-colic valve imperfect.

From a male aged 79. Diameters, ileum $1\frac{1}{4}$ inch ; colon 3 ; cæcum, to middle, about same as colon, on distal half, tapers gradually to a narrow apex. Length of cæcum, along inner margin, 3, along convex outer margin, 6 inches. Direction, first half, downwards ; last half, curved inwards and a little downwards. Apex, 1 inch internal to end of ileum, and 3 inches below that. *Appendix* $3\frac{1}{2}$ inches in length, appears to have been pendulous ; is now shrivelled, blocked by matter that has prevented inflation. *Ileo-colic valve :* Direction of ileum nearly transverse ; height of area of junction $1\frac{1}{2}$; valve very little formed, represented by only a narrow crescentic fold above and below the wide orifice. Breadth of ileo-cæcal fold $\frac{1}{6}$, ileo-colic $\frac{1}{12}$ inch ; rounded orifice $1\frac{1}{2}$ inch diameter ; the two folds do not meet posteriorly by $\frac{1}{2}$ inch, no posterior frænum, and just meet at their anterior end. This valve cannot have been competent. A crescentic fold begins near the upper part of anterior end of orifice and passes obliquely upwards across front to outer side of colon. This fold would have formed an anterior frænum had the ileo-colic flap been formed. The longitudinal bands are not seen on the cæcum or on the 2 inches of colon present in this thin-walled translucent specimen.

No. 6. (Fig. 8.) Large conical tapering Cæcum, curved inwards and upwards, with continued Appendix.

From an aged male. This cæcum resembles the last, but there is more inward direction and curving, giving an upturned apex. Diameters, ileum $1\frac{1}{4}$ inches ; colon about 3 ; *cæcum* at first same as colon, at middle has increased to about $3\frac{1}{4}$; along distal third, tapers gradually to a $\frac{1}{2}$ inch-wide apex. In direction, the cæcum soon turns inwards to the horizontal, the axis of the distal third turned inwards and upwards. Length of cæcum, along upper edge 3 inches, along very convex lower edge about 8 inches, the curved axis about 5 inches. *Appendix* proceeds from apex without constriction externally. Orifice, would admit little finger, is marked off above by a sharp edge resulting from the upward direction of the appendix. Length, 4 inches ; diameter, at middle, $\frac{1}{3}$ inch, with good capacity throughout. There is some little tapering, evidently on the first fourth, and, again, but less marked, on distal fourth. Appendix now entirely directed upwards and outwards, placed above upper edge of cæcum ; but, from position of mesentery on the distal $\frac{2}{3}$, that stage of appendix may be inferred to have been pendulous behind inner end of cæcum.

Ileo-colic valve : Ileum very little direction upwards; height of area of junction $1\frac{3}{4}$; valve fully formed, but fræna short ; posterior frænum, length 1 inch, breadth $\frac{1}{4}$; anterior frænum, length $\frac{1}{2}$ inch, breadth $\frac{1}{8}$. Breadth of upper flap $1\frac{1}{4}$, of lower flap 1 ; projection of free edge of upper flap beyond that of lower, $\frac{5}{12}$. Orifice crescentic, convexity downwards, length $1\frac{3}{4}$, breadth $\frac{5}{12}$ inch. Of the longitudinal bands the postero-internal alone is visible, and that only as far down as to the posterior frænum. There is no sacculation on the cæcum or on the 2 inches of colon present.

No. 7. Cæcum and Colon very large ; Cæcum curved inwards and upwards ; Appendix blocked.

This enormously large cæcum resembles the last in form, but more turned inwards and apex turned upwards behind ileum. Diameter of colon near cæcum, 5 inches, at six inches higher up, 4 ; of ileum, $1\frac{1}{4}$; of *cæcum*, at middle, $4\frac{1}{2}$. Length of cæcum, straight along middle, not including upturned apex, 6 ; upturned part, a blunt cone, 2 inches. *Appendix* from apex of cæcum, length $4\frac{1}{2}$; direction, at first outwards along upper margin of cæcum, behind ileum, for $1\frac{1}{2}$ inch, then backwards along inner side of colon for 2 inches, still naturally adherent, and finally pendulous for 1 inch. Diameter, on first $\frac{3}{4}$ inch, $\frac{1}{4}$ inch, then shrivelled and narrow, blocked by matter that has prevented further inflation.

Ileo-colic valve : Ileum directed a little downwards ; height of area of junction $1\frac{3}{4}$; valve fully formed and large, in no way undone by the enormous enlargement of colon and cæcum. Fræna also of full size, each reaching to next band. Upper flap, breadth 2 inches, slopes moderately towards orifice ; lower flap, breadth $1\frac{3}{4}$, nearly horizontal, concave towards cæcum. Posterior frænum, breadth at middle $\frac{3}{4}$ inch, length 3, considerable obliquity downwards, bifurcates before reaching postero-external band ; anterior frænum, length 2, breadth at middle about $\frac{1}{3}$ inch. Orifice elliptical, directed a little downwards and backwards, length 2, breadth $\frac{3}{4}$ inch, the gape diminished in dried state by great breadth of flaps. Upper flap projects $\frac{1}{4}$ inch beyond lower. No backward current could take place past such a valve. *Other folds and constrictions :* Both colon and cæcum well sacculated ; external series on dilated part of colon the narrowest and most bulging. Anterior and postero-external bands become indistinct about middle of cæcum, but three series of sacculi recognisable on cæcum also ; three in each series, the inferior continuous with external series of colon. Only slight ridges within, but at a handsbreadth above ileum, colon has three well-marked valvulæ at intervals of an inch, between anterior and postero-external bands. The great dilatation of colon begins below the lowest of these valvulæ.

(*c.*) *Adult Cæca of the Bluntly-Conical or Bulbous Form.*

No. 8. (Fig. 10.) Appendix arising from lowest part of cæcum.

This blunt *cæcum* is undivided ; anterior and postero-external longitudinal bands, situated at junction of outer and middle thirds of front and back, well enough seen, but do not indent cæcum either below or on the surfaces. Length of cæcum, in front 3 inches, behind $3\frac{1}{2}$; from level of lower edge of end of ileum, or lowest part of ileo-cæcal flap of valve, $1\frac{1}{2}$. Diameter of cæcum $2\frac{3}{4}$, of colon 3, of ileum $1\frac{1}{8}$. *Appendix* from lowest part of blunt apex of cæcum, orifice, directly inwards from this, would nearly admit point of little finger. What might be taken for a long "valve" here is but the translucent conjoined walls of the appendix and cæcum ; $\frac{3}{4}$ inch in length, in the direction of the appendix ; $\frac{1}{2}$ inch in breadth at its slightly concave free margin. Contents of cæcum could not but pass into appendix. Length of appendix $3\frac{1}{2}$. Direction, first half, close below inner part of fundus, adhering to it, and then a narrow mesentery begins ; second half, now upwards and outwards behind ileum, but may have been pendulous. Appendix funnel-shaped for $\frac{3}{4}$ inch, then uniform diameter of fully $\frac{1}{4}$ inch to bluntly pointed end.

Ileo-colic valve : Ileum directed very obliquely upwards ; height of area of junction 2 inches ; valve fully formed ; lower flap much the broadest, $1\frac{1}{2}$, upper flap 1 inch. Fræna about equal, length $1\frac{1}{2}$. breadth at middle about $\frac{1}{4}$ inch ; reach to anterior and postero-internal bands respectively. Upper flap has moderate slope to orifice, but fræna rather ascend as they pass outwards. Orifice horizontal, length $1\frac{1}{2}$, breadth $\frac{1}{2}$ inch. Upper margin projects $\frac{1}{4}$ inch beyond lower. Lower flap in line with cæcum, not nearly in line with ileum ; vertical concavity, towards cæcum, more marked at beginning of upper fourth. *Other folds and constrictions :* furrow shown on outer side in the figure, not frænal, but owing to a broad fold, $\frac{3}{4}$ inch lower, passing between postero-external and anterior bands, with narrow prolongations beyond them, inwards as far as to the postero-internal band, forwards as far as to run obliquely up to join the anterior frænum near the orifice. Constriction seen near end of cæcum, and ridge within, just above appendix, mark off what would have been the vestigial fossa had the cæcum bulged downwards in front of the original apex.

No. 9. (Fig. 9.) Appendix arising from lowest part of cæcum, and blocked.

Length of cæcum, before and behind, 3 inches ; diameter nearly 3, of colon 3, of ileum 1. This *cæcum* is slightly notched below by the anterior longitudinal band external to origin of appendix. Anterior band considerably to inside of middle, postero-external band at junction of middle and outer thirds of back ; postero-internal band seen to cross at posterior junction of flaps of valve. In this translucent specimen the course of these bands is well seen. Traced down, they bifurcate and unite around the vestigial fossa, which bulges internal to the notch at the fundus and gives off the appendix. The constriction shown in the figure across the anterior saccule of the cæcum corresponds to a well-marked fold within between the anterior and postero-external bands. This fold receives a contribution from the fibres of both bands, and at least one fold on the inner saccule of the cæcum receives the same from the postero-internal band. Two slight constrictions shown above the latter correspond to slight ridges within. *Appendix* arises from inner side of the bulging vestibular fossa; length $1\frac{1}{4}$, first $\frac{1}{3}$ inch funnel-shaped, diameter tapering from $\frac{3}{8}$ to $\frac{1}{8}$ inch, after $\frac{1}{2}$ inch with latter diameter appendix shrivelled, having been blocked by some matter preventing distention. Orifice wide, being mouth of vertically flattened funnel, bounded above by sharp concave edge. Triangular quasi-valve $\frac{1}{3}$ inch long, $\frac{1}{2}$ inch broad at free concave edge.

Ileo-colic valve:—Ileum directed a little downwards, height of area of junction 1 inch. In this specimen we have a good example of the effect of absence of the obliquely upward direction of the ileum on the formation of the valve. The upper flap continues the direction of the curve of the upper border of the ileum, and the lower flap is set at an obtuse angle, upwards, to the lower border of the ileum. Both flaps, simply, are directed obliquely towards the orifice. In this specimen, further, the flaps are rather narrow, but in No. 7 they were seen to be of full breadth. The attached margin of both flaps is uniformly convex, except that the posterior horn of the lower is straight as it ascends to join in the common frænum. Both flaps are undersized, especially the lower; breadth of upper $\frac{5}{12}$ inch, of lower $\frac{4}{12}$. *Fræna* moderate; breadth of posterior at middle, $\frac{1}{4}$ inch, of anterior $\frac{1}{6}$; posterior gains breadth at middle; both extend to the next longitudinal band, the posterior somewhat further, so as to cause a furrow on the outer side, marking off the limit of the cæcum externally and on part of the front, as shown in the figure. Before reaching their respective bands, each frænum bifurcates, the anterior one so early that the upper division might be regarded as a valvula coli accessory to the upper flap of the valve. *Orifice*, horizontal, length $1\frac{1}{3}$, breadth $\frac{1}{2}$ inch; lower edge much the most concave, lower flap being undersized. Lower flap more inclined to orifice than upper; latter moderately so. Upper flap projects $\frac{1}{4}$ inch beyond lower. In regard to possible competency, looking to the breadth and position of the flaps, it does not seem that they could meet efficiently. *Constrictions on the colon* well-developed, one, $2\frac{1}{2}$ inches up, crosses in front from postero-internal to postero-external band, narrowed at anterior band; $\frac{1}{2}$ inch higher, a broader fold is present between anterior and postero-external bands; and $\frac{1}{2}$ inch higher a moderate crescent goes between postero-external and postero-internal bands. With also the crescentic fold above noted crossing anterior saccule of cæcum, it cannot be said that the deficient breadth of the two flaps of the valve is part of any deficiency in the general valvular development of the intestine.

No. 10. Appendix arising from lowest part of a bifurcated cæcum, and directed upwards behind cæcum. Ileo-colic valve thickened and incompetent.

From a male æt. 49. Length of cæcum, before and behind, $2\frac{1}{2}$ inches, from ileum $1\frac{3}{4}$; diameter of cæcum and colon $2\frac{1}{2}$, of ileum $\frac{7}{8}$. *Cæcum* as seen in external lateral view, strongly notched by postero-external longitudinal band. Anterior band faintly marked, with almost no constriction, so that anterior and internal saccules form one wide saccule; but postero-external and postero-internal bands project in, and strongly mark off posterior saccule, which bulges so much as to give bifurcated form to fundus. The two pouches project equally downwards. *Appendix* arises from lowest part of anterior and wider pouch, close to division between them. Orifice towards outer side of small vestigial fossa, oval antero-posteriorly, $\frac{1}{3}$ by $\frac{1}{6}$ inch, sharp crescentic border posteriorly. Length of appendix $3\frac{1}{2}$; direction, curves back below cæcum, lodged between the two sacculi, then up in groove on back as high as middle of extreme end of ileum. Diameter, begins by slightly funnel form, on first inch diminishes from $\frac{1}{4}$ to $\frac{1}{6}$ inch, retains that width till last $\frac{3}{4}$ inch on which it appears rather to increase, end bluntly pointed.

Ileo-colic valve: Specimen marked as one of "Incompetent ileo-colic valve; allowed air to regurgitate freely from great to small intestine, cæcum out of body." Ileum directed upwards and then very much backwards. We have here an example of the variety in which the ileum curves round to enter at the back. Orifice situated at nearly middle of back of great intestine and looks almost directly forwards. Area of junction nearly horizontal, long axis 1¾ inch. Upper flap of valve narrow, ⅓ inch ; lower flap ¾ inch anteriorly, but narrows unusually on its posterior half. No posterior frænum, only a thickening in the wall ; anterior frænum of good length but narrow, 1/12 inch. Upper flap slopes considerably to the orifice. Orifice broadly ovoid, 1⅛ by ⅝ inch. Upper margin does not project beyond lower. Upper flap thickened and not translucent, as if from disease, especially at margin ; edge of lower flap also thickened. The appearances above noted would lead to the inference that this valve could not have been competent, irrespective of the fact that it was found not to be. This may have been in part owing to disease. There are no transverse folds of any kind in the cæcum or the 3 inches of colon present, except those of this imperfect ileo-colic valve.

No. 11. (Fig. 11.) Appendix arising near lowest part of cæcum, and directed upwards and inwards behind colon.

Length of *cæcum* behind, 2½ inches, from ileum 1¼, interior, from posterior end of ileo-colic orifice, 2. Diameter 3, of colon 3, of ileum 1¼. Seen behind, as in the figure, fundus bilobed ; between the lobes, below, is seen bulging wall of vestigial fossa. *Appendix*, arising from latter, 5 inches in length ; direction, first straight up in deep fossa between bulging sacculi of cæcum to nearly level of upper edge of ileum, then distal half upwards and inwards on back of colon. Diameter ¼ inch, till distal inch, which is shrivelled, inflation abruptly stopped by some blocking matter. Orifice, about ¾ inch up from bottom of cæcum, rather small, seen at upper angle of vestigial fossa, crescentic edge above. Postero-internal band forms prominent median ridge above orifice, corresponding to groove seen behind between internal and external saccule.

Ileo-colic valve: Ileum directed moderately upwards ; height of area of junction 1¾ inch ; valve large, upper flap and posterior frænum especially. Breadth of flaps, each 1¼ inch, upper considerably inclined towards orifice, lower still more so. Both fræna long and very oblique downwards and outwards. Breadth of posterior at middle, 1 inch, of anterior ⅓. Strong accessary folds from above join upper flap and posterior frænum, former towards anterior and outer part of flap, latter near inner part of attached edge. *Orifice* horizontal, length 1½, breadth ½ inch ; upper edge projects ¼ inch beyond lower. When specimen held fairly, orifice looks much less outwards than usual, about midway between outwards and forwards.

It is evident that in an operation in a case in which such a variety was present, the appendix would be found very unusually placed, in the deep fossa behind cæcum, bound into the fossa by the peritoneum, and then away up behind colon ; or, again, that in an operation on the right colon, the distal part of the appendix might be in the way.

No. 12. Appendix arising from back of a partially bifid cæcum, distal half directed outwards between cæcum and colon.

Length of cavity of *cæcum*, to inner side 3 inches, at outer side 1½, this owing to great obliquity of upper flap and posterior frænum ; same behind from frænal furrow. Diameter of cæcum 2½, of first part of colon 2½, of ileum 1 inch. Cæcum moderately notched (notch ¼ inch deep) to inside of middle, by anterior band ; fundus descending ½ inch lower, as blunt apex of cæcum, formed by anterior saccule. *Appendix* arises about middle of back, length 3 inches ; direction, first half straight up, then turns, at rounded-off right angle, outwards and then downwards, lodged in frænal furrow between cæcum and colon ; about distal ½ inch appears to have been free. After short and slight funnel-shaped beginning, diameter on middle third ¼ inch, on first and last thirds, less than that. Orifice at middle of vestigial fossa seems small for such an appendix, but this cannot now be accurately observed; bounded by crescentic edge above. Vestigial fossa, a rounded depression, receiving end of little finger; surrounded by junction of the bifurcations of the three well-marked bands.

Ileo-colic valve: Ileum directed very obliquely upwards; height of area of junction 1½ inch; valve fully formed; flaps of equal breadth, 1⅛ inch; fræna large, anterior cut short, breadth ⅓, length of posterior frænum 1½, breadth at middle ¾ inch. Upper flap and posterior frænum together, as in last specimen, form a great crescentic membrane, projecting broadly into the cavity, in this specimen crossing it very obliquely downwards and outwards with a fall of 1½ inch. About an inch above it a great fold, parallel to it, crosses back and outer side of colon, ¾ broad to left side, diminishing outwards to ⅓ inch. *Orifice*, elliptical, and slanting downwards and backwards, 1⅜ by ¼ inch, but compressed from artificial bend up of lower flap; should be reckoned ⅓ inch. Upper margin projects ½ inch beyond lower; this not owing to any displacement of lower margin. The ileum, 1½ inch from its end, has a valvule, going half round, ¼ inch broad at middle.

No. 13. Appendix arising from back of a partially bifid cæcum, and directed upwards. Ileo-colic valve incompetent from disease.

This *cæcum* is notched on inner side, at anterior band, notch ½ inch deep; anterior saccule goes 1¼ inch below notch and forms rounded acquired apex of cæcum. Length, before and behind, 3¼, to ileum 3 inches; diameter 2½, of colon, at first saccules, 3, at second saccules, 2¼; of ileum 1⅛. *Appendix* arises a little above and to inner side of middle of back of cæcum; length, 2½; direction, curves like a bow inwards and upwards to behind middle of end of ileum; diameter, at middle ⅓ inch, less on first and distal fourths; distal ⅙ inch blocked by matter that has prevented inflation; a very short funnel at beginning is the bulging of vestigial fossa. Latter, seen within, is a rounded depression receiving end of little finger; orifice seems small, but this observation cannot now be accurately made. The three bands project within cæcum, marking off the three saccules, and form equilateral triangular area, of 1 inch, as their bifurcations unite around vestibular fossa.

Ileo-colic valve: This valve allowed of free regurgitation of air from great to small intestine, before removal from the body. Upper flap found to be diseased. Ileum directed moderately upwards; height of area of junction 1¼ inch. Lower flap, breadth ⅔ inch, being less than usual; thickened at orifice. Upper flap of good breadth, 1 inch, but diseased; a semilunar erosion 1 inch broad and ¼ inch deep on anterior ⅔ of its margin, with thickening at and below the margin. Upper flap much inclined towards orifice. *Fræna* horizontal, of good breadth, but now cut short; breadths near orifice, posterior ½ inch, anterior ¼ inch. *Orifice*, horizontal, crescentic, upper edge concave upwards, length 1½, breadth ½ inch, upper edge still projects ⅓ beyond lower. *Other folds:* A crescentic fold, ⅛ inch broad, subdividing inner saccule of cæcum, passes from anterior band upwards and backwards to lower flap of valve near posterior end of latter. First fold in colon, 2 inches above valve, passes between postero-internal and anterior bands, and a little beyond them. Within end of ileum are two narrow folds like valvulæ conniventes; one behind, runs down to join lower flap of valve above the middle; the other in front, runs up to join the upper flap near the middle of its attached margin.

No. 14. (Fig. 12.) Appendix arising from back of cæcum; distal part coiled up behind cæcum.

This *cæcum* is gently bilobed on inner side by anterior band; anterior saccule forms blunt acquired apex of cæcum. Length, behind and interior, 3, in front and to ileum 2½ inches; diameter 3¼, of colon 3, of ileum 1 inch.

Appendix arises below middle of back; length 4 inches; direction, of first half, upwards, distal half coiled circularly below end of ileum, coil more than a circle, tip passing behind; ascending stage in contact with cæcum, coiled stage nearly so, retained by short mesentery. Begins for $\frac{1}{4}$ inch with moderate funnel shape, from upper part of bulging vestigial fossa; diameter diminishes a little along first third, average about $\frac{1}{4}$ inch; then uniform diameter of $\frac{1}{6}$ inch to bluntly pointed end. Orifice at upper part of vestigial fossa; triangular quasi-valve $\frac{1}{3}$ inch in height, $\frac{1}{4}$ inch in breadth at deeply concave free edge, seen to be the fused walls of cæcum and appendix. This orifice, well seen here, is somewhat less in diameter than the appendix just beyond it. Arrangement at vestigial fossa well seen in this translucent specimen; bifurcations of each of the three bands join and enclose a triangular area of about 1 inch; internal fasciculi of each turning in, like circular fibres, and rounding off the angles; the area, a shallow depression, deepening towards orifice of appendix; the whole being the flattened remains of the funnel-shaped original apex of the fœtal cæcum.

Ileo-colic valve: Ileum very little direction upwards and no previous contact with cæcum; height of area of junction $1\frac{1}{4}$ inch, and oblique upwards and a little outwards; valve rather undersized; upper flap the broadest, upper $\frac{3}{4}$, lower $\frac{1}{2}$ inch, upper slants greatly to orifice; lower inclined uniformly towards orifice. Attached edge of lower flap convex throughout; attached edge of upper flap a little concave on both sides. *Fræna* well formed, descend moderately to next longitudinal band; posterior frænum, length 2 inches, bifurcating before ending at postero-external band, breadth $\frac{1}{3}$; anterior frænum, length 2, breadth $\frac{1}{4}$. *Orifice* nearly horizontal, length $1\frac{1}{8}$, breadth $\frac{1}{12}$; upper edge projects $\frac{1}{6}$ inch beyond lower. Both edges thickened from disease. This valve does not look as if it could be quite competent.

No. 15. Appendix arising high up on inner side of cæcum, and first half directed inwards below ileum.

Great intestine rather small. *Cæcum*, length, at middle, 2 inches, at inner part $2\frac{1}{4}$, at outer part $1\frac{1}{2}$; this from great obliquity of posterior frænum and upper flap of valve. Diameter 2, of colon $1\frac{3}{4}$, of ileum 1 inch. *Appendix* arises high on inner side, only $\frac{1}{4}$ inch below valve. Length 2 inches; direction, first half transversely inwards, distal half has been pendulous, now turned forwards and then downwards. Narrow mesentery binds first stage to ileum, and continued along concavity of second stage to within $\frac{1}{2}$ inch of end. Diameter $\frac{1}{5}$ inch, uniform to bluntly conical end, the first $\frac{1}{4}$ inch at origin a little wider. Vestigial fossa exceptional, is a transversely elongated boat-shaped recess, $\frac{1}{4}$ inch below and parallel to lower flap, $\frac{7}{8}$ long, $\frac{1}{6}$ broad, and about $\frac{1}{8}$ inch deep towards left end; appendix proper begins at latter by abrupt rounded orifice with sharp crescentic edge in front. Bluntly conical cæcal cavity formed almost entirely by anterior saccule, narrow space between vestigial fossa and lower flap representing internal saccule.

Ileo-colic valve: Ileum directed very little upwards; height of area of junction $1\frac{1}{2}$ inch; valve fully formed; flaps of equal breadth, $\frac{3}{4}$ inch. *Fræna* well formed, breadth of posterior about middle $\frac{1}{4}$ inch, of anterior $\frac{1}{6}$, length of anterior $\frac{3}{4}$, of posterior 1 inch and then cut short. As above referred to, upper flap and posterior frænum slope very obliquely downwards and outwards, falling $\frac{3}{4}$ inch; upper flap slopes also very much to orifice, falling $\frac{1}{2}$ inch. Lower flap slopes much and uniformly to orifice. *Orifice*, directed downwards and backwards, crescentic, length 1 inch, breadth $\frac{1}{4}$, upper margin projects $\frac{1}{4}$ inch beyond lower. *Other folds:* Colon well sacculated. A narrow fold, accessory to upper flap, descends on inner side of colon, and ends at about middle of upper flap.

No. 16. (Fig. 13.) Long and narrow Appendix arising from a funnel at inner and back part of cæcum.

From a female æt. 64. Length of cæcum 3 inches; diameter $2\frac{1}{2}$, of colon

$2\frac{1}{2}$, of ileum 1 inch. *Cæcum*, bluntly conical fundus formed by anterior saccule; posterior saccule moderately bulging; internal saccule more bulging. The three bands indistinct at colon but well-marked on cæcum, dividing and surrounding mouth of wide funnel-shaped vestigial fossa; lower boundary rising as crescentic fold from bulging of anterior saccule below it. Funnel 1 inch wide at its nearly round mouth, length $\frac{3}{4}$ inch, proceeds from about middle of inner and posterior aspect of cæcum, appears as if from inner side in the figure, specimen being viewed from inner side to show funnel. Orifice of *Appendix* has no sharp edge or valve, being continued from apex of funnel; length of appendix $4\frac{3}{4}$ inches; tapers a little for first half inch, then diameter about $\frac{1}{8}$ inch. Is now shrunken in parts, but appears to have been open to near if not quite to end. Is now directed as in figure, curving upwards; no note kept as to natural position, but there is no twist or sharp bend of the tube.

Ileo-colic valve: End of ileum directed downwards, and connected to colon earlier than to cæcum; height of area of junction $\frac{5}{8}$ inch. Valve medium size; flaps incline about equally to the orifice; upper flap broadest, $\frac{3}{4}$ inch, lower $\frac{1}{2}$ inch. *Fræna* undersized and have no slope downwards; posterior, length 1 inch, breadth at middle $\frac{1}{8}$; anterior length $\frac{3}{4}$, breadth $\frac{1}{12}$. *Orifice* elliptical, very little slope downwards and backwards; length $1\frac{1}{6}$, breadth $\frac{1}{2}$ inch; upper margin projects $\frac{1}{4}$ inch beyond lower. Horns of lower flap do not join upper by $\frac{1}{4}$ inch, so that fræna belong entirely to upper flap. Margin of upper flap thickened, and that of lower flap slightly so. Nevertheless, this valve looks capable of being efficient.

No. 17. Long and narrow Appendix arising from a funnel at upper part of back of cæcum. Ileo-colic orifice small.

Length of cæcum $3\frac{1}{2}$ inches; diameter $2\frac{3}{4}$, of colon $2\frac{1}{2}$, of ileum 1 inch. This *cæcum* resembles last in simple bulbous form, anterior band, though well seen, not causing constriction, but funnel-shaped vestigial fossa placed higher, at $\frac{1}{2}$ inch below lower flap of valve. Mouth of funnel, $1\frac{1}{2}$ by $\frac{3}{4}$ inch, surrounded by divisions of the three bands; has large semilunar valve-like fold at upper and inner side, $\frac{1}{3}$ inch broad, containing fibres passing between anterior and postero-external bands. Length of funnel $\frac{1}{2}$ inch. *Appendix* arises from apex of funnel, but passes off at acute angle; small ($\frac{1}{4}$ inch) orifice of appendix proper, shows sharp crescentic edge above, the free edge of a small semi-oval quasi-valve. Length of appendix 4 inches; diameter, after slightly tapering commencement, $\frac{1}{8}$ inch, a little wider on last $\frac{1}{2}$ inch. Direction, now upwards and outwards to behind outer side of first 3 inches of colon. No twist or bend of tube to indicate that this was not the natural position, and appendix appears to have been adherent on to the end.

Ileo-colic valve: Ileum curves very obliquely upwards, joining cæcum $1\frac{1}{2}$ inch below the orifice, and passes more to the back than usual. Area of junction very long, 2 inches, directed upwards and backwards, and curved with concavity outwards. Lower flap of valve therefore long, and its outline curved. Fræna and valve together have great obliquity downwards and outwards, giving a fall of 1 inch on upper flap and posterior frænum, and altogether of 2 inches if anterior frænum included; cavity of cæcum thus much longer at inner side—5 inches—than at outer side, 3 inches. Upper flap, breadth 1 inch, not inclined towards orifice, but rather turned up owing to great obliquity of anterior frænum, so that upper surface of the flap is concave to a depth of $\frac{1}{4}$ inch. Lower flap, breadth (height) $1\frac{1}{2}$ inch; in its lower $\frac{2}{3}$, before it inclines towards the orifice, appearing as if part of the wall of the cæcum. *Fræna*, posterior, length to postero-external band 2 inches, bifurcated on last inch, breadth at middle $\frac{1}{2}$ inch; anterior frænum, length to anterior band $1\frac{1}{2}$, breadth $\frac{1}{8}$ inch. *Orifice*, looks more forwards than inwards, partakes of general slant downwards and outwards, elliptical, length $\frac{7}{8}$ inch, breadth $\frac{3}{8}$; upper margin projects $\frac{3}{8}$ inch beyond lower. Upper margin thickened to breadth of $\frac{1}{8}$ inch, as seen below; lower margin only a little thickened. There can be no doubt as to the competency of this valve, irrespective of the unusually small orifice, and notwithstanding the pathological thickening mentioned.

No. 18. (Fig. 14.) Very short and wide Appendix arising at inner side of cæcum. Ileo-colic valve exceptional and probably incompetent.

From a male, æt. 45. Bluntly pointed fundus of this rather large *cæcum* formed, as usual, by enlarged anterior saccule; internal saccule moderately bulging, marked off in front by depression at anterior band; posterior saccule scarcely bulging. No frænal furrow before or behind; length of cavity 3 inches; length to ileum, vertically $1\frac{1}{2}$, along the side $2\frac{3}{4}$. Diameter of cæcum 3, of colon $3\frac{1}{2}$, of ileum $1\frac{1}{2}$. *Appendix*, length, upper edge $\frac{1}{2}$, lower edge $\frac{3}{4}$ inch. First third tapering, diameter of remainder $\frac{1}{3}$ inch on to blunt end. Arises above middle of inner side, below and rather behind ileum; directed inwards and upwards, with $\frac{1}{3}$ inch-broad mesentery between it and ileum. Seen from within, vestigial fossa is a triangular recess $1\frac{1}{2}$ by $\frac{3}{4}$ inch, bounded by the bifurcations of the three bands. Orifice of appendix a wide oval, nearly admitting point of little finger, bounded on side from which appendix goes by sharp crescentic edge.

Ileo-colic valve: Ileum moderate obliquity upwards; height of area of junction 2 inches. No posterior frænum; posterior horns of flaps do not meet by $\frac{1}{4}$ inch; at anterior end of orifice flaps join in a common membrane $\frac{1}{4}$ inch broad, and a very narrow $\frac{1}{24}$ inch frænal ridge passes from margin of upper flap to anterior band. Breadth of lower flap $1\frac{1}{4}$, of upper $\frac{1}{2}$ inch. *Orifice* a broad oval, slanting a little upwards and backwards, length $1\frac{1}{2}$, breadth $\frac{5}{8}$; lower edge projects $\frac{1}{4}$ inch beyond upper. This valve does not look as if it could prevent regurgitation completely. *Other folds:* The first decided fold in colon occurs 4 inches above valve, passing between postero-external and anterior bands. The constriction, seen on inner side in the figure, about 2 inches above ileum, has not even a ridge within, but lodges a considerable artery. On the outer side of dilated part of colon and of cæcum, several slight constrictions are seen in the figure, corresponding to only narrow ridges within, but mainly lodging the arteries. It may be noted that, on a level with where a prolonged posterior frænum would have been, there is a crescentic fold, $\frac{1}{12}$ inch in breadth, crossing between the postero-external and anterior bands.

No. 19. Short and narrow Appendix from upper part of back of a short cæcum. Ileo-colic valve very exceptional and probably incompetent.

Cæcum of simple bulbous form, length $1\frac{1}{2}$; diameter 2, of colon $1\frac{3}{4}$, of ileum 1 inch. *Appendix* arises quite at upper part of back, oval orifice, $\frac{1}{4}$ inch, close below ileo-cæcal flap, with sharp crescentic edge below. Appendix $\frac{3}{4}$ inch in length, on first half tapers from $\frac{1}{4}$ to $\frac{1}{6}$ inch, last half blocked and shrivelled. Direction now downwards and inwards behind lower part of ileum. *Ileo-colic valve:* Ileum moderate obliquity upwards; height of area of junction $1\frac{1}{2}$ inch. No fræna; posterior horns do not meet by $\frac{1}{2}$ inch; the two flaps form one crescentic curtain-like membrane, broad below, narrow above, passing round $\frac{4}{5}$ of a broadly oval orifice. Breadth of lower part, corresponding to lower flap, $\frac{3}{4}$ inch; at anterior end of orifice $\frac{1}{4}$; above, corresponding to upper flap, $\frac{1}{6}$ inch. Orifice oval, downwards and a little backwards, length $\frac{7}{8}$, breadth $\frac{5}{8}$; admits pulp of forefinger. Valve in its now dried condition projects into great intestine like base of truncated cone, but pressure from great intestine would float it the other way. This valve could not of itself prevent regurgitation, though it might assist a severely contracted ileum to do so. No folds in cæcum or in the 3 inches of colon present. This condition of the valve is interesting, as corresponding to the curtain stage in the evolution of the valve among mammals, referred to in Note A.

No. 20. (Fig. 15.) Very narrow Appendix arising from back of a large cæcum. Ileo-colic valve typical.

Length of *cæcum*, from frænal furrows, $3\frac{1}{2}$ inches, from ileum $2\frac{3}{4}$. Diameter $3\frac{1}{2}$, of colon $3\frac{1}{4}$, of ileum 1 inch. The three saccules of cæcum well marked off by the three bands, within and on the surface ; bluntly rounded fundus formed by anterior saccule, dipping $1\frac{1}{2}$ inch below level of vestigial fossa. The fossa is an oval depression, receiving end of little finger, at upper part of equilateral triangular area, of 1 inch, formed by junction of bifurcations of the three bands. Orifice of *appendix*, at upper part of fossa, about $\frac{1}{8}$ inch, bounded above by crescentic free border of $\frac{1}{8}$ inch-long so-called valve. Seen behind, as in the figure, there is first the bulging of the vestibular fossa, and arising from it abruptly the very narrow appendix. Diameter of first $\frac{3}{4}$ inch is only $\frac{1}{12}$ inch, enlarging at bend to $\frac{1}{8}$ inch. Direction at first, for nearly an inch, straight up on back of cæcum, then bends abruptly inwards and downwards. Remainder cut off, shows oval lumen of $\frac{1}{8}$ inch.

Ileo-colic valve : Ileum directed very obliquely up ; height of area of junction $1\frac{3}{4}$ inch. Formation of valve what may be called typical. Breadth of lower flap 1 inch, of upper flap $\frac{7}{8}$. *Fræna*, posterior, length to postero-external band 2, breadth at middle $\frac{1}{3}$ inch ; anterior frænum, length to anterior band 2, breadth $\frac{1}{6}$ inch. *Orifice*, a narrow ovoid, rounded at anterior end, pointed at posterior end ; direction horizontal, length $1\frac{1}{2}$, breadth $\frac{3}{8}$, a little longer and narrower than usual. Upper margin projects $\frac{1}{4}$ inch beyond lower.

No. 21. Narrow Appendix arising from back of deeply bifid cæcum, and blocked. Ileo-colic orifice small.

Length of *cæcum*, from posterior frænal furrow $2\frac{1}{2}$ inches, from ileum $1\frac{1}{4}$, within from valve 2 ; diameter $2\frac{3}{4}$, of colon same, of ileum $1\frac{1}{8}$ inch. This cæcum is deeply constricted longitudinally, in front and below at anterior band, behind at postero-external band. Seen from cavity, there is a high antero-posterior septum, between the two sacs of the bifid fundus, where the anterior and postero-external bands pass along. Of these two bulging pouches the external, belonging to the anterior saccule, is the broadest, and goes furthest down, projecting $\frac{3}{4}$ inch below notch, the internal about half that distance. Postero-external band well seen, as an elevation within and a groove on the exterior, but posterior saccule of cæcum does not bulge so much as the other two. *Appendix :* Position of closed orifice seen by transfixing with pin from behind, close to outside of elevated septum, at inner part of recognisable triangular vestigial area. Seen behind, appendix arises above middle of back of caecum, coming out of groove between the two saccules. It is now entirely shrivelled, air having been unable to gain entrance in inflation. It has been about 2 inches in length, appears to have been pendulous, lies a little behind ileum, with narrow mesentery between them ; mesentery seen to run along the tortuous shrivelled appendix for $\frac{5}{8}$ of its length. Mesentery seen to carry an artery, size of good pin, from which it may be inferred that the blocking of the appendix is not of old standing.

Ileo-colic valve : Ileum has medium upward direction ; height of area of junction $1\frac{1}{2}$ inch ; valve remarkable ; fræna and upper flap together form one long crescentic symmetrical fold, passing two-thirds round the intestine, reaching between the postero-external and anterior bands, and with great inclination downwards, giving a fall of $\frac{3}{4}$ inch. Here it appears that the upper flap of the valve and the fræna are but one of the valvulæ coli more developed. Breadth at upper flap $\frac{5}{8}$, of lower flap $\frac{6}{8}$; fræna nearly symmetrical ; length $1\frac{1}{2}$, breadth at middle $\frac{1}{3}$ inch. *Orifice* the smallest I have seen, but no appearance of disease ; crescentic, horizontal, length $\frac{3}{4}$, breadth $\frac{1}{6}$ inch. Upper margin projects about $\frac{1}{8}$ inch beyond lower. This valve would be fully efficient.

Other folds : The two fræna, as noted above, cease at the postero-external and anterior bands respectively, but commencing at these bands there is a crescentic fold, attaining breadth of $\frac{1}{8}$ inch, crossing the anterior saccular series, virtually continuing the slanting plane of the valve and fræna. In this we have an instance of the valvulæ going round and round on the same plane; the one just noted extending only between two neighbouring bands, the other, including the upper flap and its fræna, crossing an intermediate band, and having a continuous free concave edge. A shorter but broader fold crosses between the anterior and postero-external bands about an inch further down. In this much sacculated specimen, the first large fold occurs 2 inches above the valve, connecting the postero-external and postero-internal bands. In the intervening space occur several minor folds, and on the opposite internal saccules two minor ridges. All of these lodge large arteries coming forward from the main trunks at the back, some of the ridges not projecting more than enough for that adaptation.

Blood-supply of the valve, as seen in this well-injected specimen. Posterior part of upper flap and posterior frænum receive supply from main artery in posterior frænal furrow; anterior part of upper flap and anterior frænum from main artery in angle between cæcum and top of ileum; lower flap receives supply, in front, from continuation of latter artery between cæcum and front of ileum, behind, from artery descending between cæcum and back of ileum, and below, from branches ascending from those distributed on cæcum, all branching and anastomosing freely on the flap. The fold noted above as on same oblique plane with fræna, and the crescentic fold an inch below it, are seen to carry each a good-sized arterial arch, distributing and anastomosing across middle line, in accordance with the general system of vascular supply to the anterior series of saccules.

No. 22. (Fig. 16.) Appendix entirely disappeared from its former point of origin at back of deeply bifid cæcum. Ileo-colic valve diseased.

Length of *cæcum*, behind $2\frac{1}{2}$ inches, to ileum only $\frac{1}{2}$ inch, cavity 2; diameter $3\frac{1}{2}$, of colon $3\frac{1}{4}$, of ileum 1 inch. Fundus divided at unusually strong anterior band, by wide $\frac{1}{2}$ inch-deep notch; the two lobes formed by internal and anterior saccules, of equal breadth and projection downwards. Posterior saccule small and not much bulged, seen in the figure as the upper area between postero-external band and posterior frænal furrow. Seen within, anterior band $\frac{1}{2}$ inch broad in front, now forms at fundus a high and narrow median septum between the two bulging sacculi, which bifurcates upwards, joining bifurcations of the other bands, enclosing well-marked triangular vestigial area, $1\frac{1}{2}$ long by 1 inch in breadth. Orifice of *appendix*, now entirely closed, has been near middle of inner boundary of vestigial triangle, as ascertained by puncturing from behind. Seen behind, there is, where the mark is placed in the figure, below middle of back of cæcum, a small thickening like a stump, indicating where the now absorbed appendix had arisen. There is no trace of an opening either within or without, nor any appearance of disease. The triangular vestigial area, slightly bulging behind, is also shown in the figure.

Ileo-colic valve: Ileum directed almost vertically up and passes further to the back than usual; height of area of junction $2\frac{1}{4}$ inches. Hence, lower flap of valve broad (high) and line of attachment bent with concavity to the right; line of attachment of upper flap uniformly convex. Breadth of lower flap $1\frac{1}{4}$ inch, of upper flap now only $\frac{1}{2}$ inch. Posterior *frænum* large, descends very little, length to postero-external band 2 inches, breadth at middle $\frac{1}{2}$ inch; no anterior frænum. *Orifice* ovoid, sharp at posterior end, horizontal, length $1\frac{3}{8}$ inch, breadth $\frac{5}{12}$; margins equally projecting. Margins of orifice thickened to about $\frac{1}{12}$ inch all round; margin of upper flap shows irregular shallow notch towards outer side as if from former ulceration, and the flap generally towards margin is thickened and wants the usual translucency. This valve looks as if it might have been competent but for the diseased condition of the upper flap, but the narrowness of the upper flap and the absence of an anterior frænum renders that somewhat doubtful.

Other folds: On outer side, two well-marked folds cross between anterior and postero-external bands, one ½ inch below, the other ¾ inch above end of posterior frænum. Constriction caused by upper might be mistaken for limit of cæcum. They are continued as ridges a little way beyond postero-external band, lower one running up to frænum. Between these two large folds is a narrow one in line with lower part of bifurcated end of frænum. Accessory to upper flap of valve, on inner side of colon, a narrow fold descends obliquely backwards to near fore part of middle of flap, which might do a little as substitute for anterior frænum.

No. 23. Four specimens showing variable length of Appendix Vermiformis, one six inches in length.

These four specimens are detached from the cæcum, and laid together to show comparative length. (1.) The longest is 6 inches, diameter about ⅙ inch, wider on distal inch. (2.) One, 4½ inches in length, diameter about ⅙ inch, not inflated on distal inch. (3.) One, 3¾ inches, well inflated throughout and shows considerable tapering; on first half inch, tapers from ⅓ to ¼ inch; rather before middle, it has diminished to ⅛ inch, and retains that diameter to the blunt end. These three specimens have still attached to them a short funnel of the cæcum. (4.) One, 2¼ inches in length, has arisen abruptly; diameter, on first half inch, ¼ inch; at middle, diminished to ⅙ inch; last quarter inch tapers to a pointed end. In all dried specimens the diameter of the appendix is probably somewhat less than natural. The shortest appendix in all my specimens is that of No. 18, the length ¾ inch.

(*To be continued.*)

Part Second.

REVIEWS.

Selected Monographs on Dermatology. UNNA, NIELSEN, DUHRING, BRONSON, BLANC, BERGER, PRINCE-MORROW. London: The New Sydenham Society: 1893.

IT is no easy task to select from the mass of writings which deal with diseases of the integumentary system, a limited number of such outstanding excellence as to justify their being reproduced in a volume of the New Sydenham Society's series. When we say that this has on the whole been satisfactorily accomplished in the book before us, it reflects no small credit on the acumen and vigilance of the editors and committee. Such a work must be cosmopolitan in its aim, which is to rescue from oblivion landmarks in progress, to be referred to in after-time as guides or indications of the position certain questions have attained at a definite era.

The first place is accorded to Unna, as a recognition of his many-sideness of view, his rare suggestiveness, his originality and independence of opinion. There are, indeed, few men who have been able so thoroughly to free themselves from the shackles of preconceived ideas, and boldly to strike out in a novel path of thought.

Whether we peruse his interesting lectures on the general pathology of the skin, or study in his company the connexion which exists between the seborrhœic process and the eruptions in syphilis, or inquire into the question of the varieties of favus, or learn from him the advances which have been made—many of these emanating from his ingenious brain—in the therapeutics of the skin, one cannot fail to own that he has learned something new and valuable. The excerpts from his numerous writings, of which a full list is appended, is without doubt a representative one, but there are one or two papers which we should have wished had been included, in particular one on Ichthyol and Resorcin, which appeared as an extra part of the *Monatshefte* for 1886, one of the Dermatologische Studien by various authors, all of which are of much scientific importance. It has been found necessary, too, to condense some of the articles, and though this has been admirably done by Dr Abraham, still this has led to an unavoidable sacrifice of lucidity in argument in some instances.

Nielsen of Copenhagen is represented by two contributions,—one on the Appearance of Herpes Zoster during the administration of Arsenic, scarcely quite convincing, and a second on Psoriasis, much more valuable, and which lends some additional support to the parasitic theory of the disease, while stating fairly and comprehensively the other hypotheses of its causation. This article, the offspring of one of the younger dermatologists working under the eye of Haslund, is well worth reading.

The claims of Duhring as the exponent of the doctrine of dermatitis herpetiformis are well met by a reproduction of his numerous papers on that subject, scattered in the main throughout American periodicals, and thus little accessible to the majority of British readers. To him undoubtedly belongs the credit of having raised to an independent position as a distinct disease under that name a group of phenomena which had been previously either overlooked or misinterpreted. It is an excellent instance of the value of the inductive method. At the same time Duhring seems himself to have omitted to notice the descriptions which Bazin and Tilbury Fox gave of an allied or identical disease under the less suitable designation of Hydroa, or Hutchinson's *résumé* of such cases under the same denomination. Hutchinson, indeed, recanted at a later time, and thought iodide of potassium was the culpable agent in some, if not all, missing the explanation afterwards furnished by Brocq, that iodide when administered in cases of dermatitis herpetiformis intensifies to an extraordinary degree its lesions and symptoms generally. Duhring unaccountably leaves most, if not all, these points unnoticed, which, when one recalls the extent of his reading as shown in his treatise on *Diseases of the Skin*, is quite inexplicable, and detracts from the completeness of these articles.

The clever brochure of Dr Bronson, another American author, on The Sensation of Itching, also well merits the space allotted to it.

The connexion he deduces between pruritus and a perversion of the sense of contact is original, while the whole paper gives evidence of high logical power.

More and more frequently of recent years attention has been directed from all sides to the consideration of the affection called originally by Alibert, Mycosis fungoides, a term which, till the true nature of this remarkable disease becomes further elucidated, had better be retained. Blanc's report of a case is so full, and refers to such a typical example, that it is well worthy of being included in this volume, for it will certainly serve good purpose in enabling it to be more readily recognised.

The short account of Pellagra by Berger of Gradisca gives in a succinct manner the chief features of a disease which is far more common than is suspected in countries where maize forms a principal part of the dietary. The inanition and the intoxication theories of its origin are discussed, and the author's adhesion to the latter is fully justified.

The most valuable of the whole contents for the general reader is, however, the Clinical Study of Drug Eruptions by Dr Prince A. Morrow, here edited and annotated by Dr Colcott Fox. The original work was the best treatise extant on the subject, and the additional matter contributed by Dr Fox has brought it completely up to date. The importance of such a compendium of the manifold disorders of the skin which arise from the remedies, new and old, in more or less constant use, need not be insisted on. If the Sydenham Society had done no more than place this amended reprint in the hands of their members, it would in itself have proved of great utility.

Microscopic Observations on the Hæmatozoa of Malaria, with an Appendix containing a series of Illustrations and Descriptions. By Surgeon-Captain PATRICK HEHIR, M.D. *The Indian Medical Record*, Vol. VI., Nos. 7, 8, 9.

Some Objections to the Hæmatozoic Theories of Malaria. By Surgeon-Captain RONALD ROSS. *The Medical Reporter*, Vol. II., No. 3, March 1, 1893.

THESE two papers form a marked contrast. They were both written in India; they both deal with the subject of malaria and with the supposed cause of that disease. A very brief *résumé* will be interesting. We will deal with the latter paper first.

Surgeon-Captain Ross fears that Laveranism is about to be completely victorious in India; but whilst acknowledging that Indian medical men do not obtain and read every scientific memoir on the subject of fever, yet they have "half a dozen cases under daily observation and treatment, and we [they] possess every opportunity of studying accurately the symptoms and progress of every sort of endemic fever." This being the case, one reads with surprise in this paper that a large number of observers in India are dissatisfied with the views given in the text-books, and they think that the old heroic definitions of Martin and Maclean appear to be more or less fabulous; and the author endeavours to show why it is extremely improbable that the large majority of Indian fevers are due to any specific poison inhabiting the blood, and why, while certain organisms may quite possibly be found in the blood in these cases, their presence there is probably quite a secondary matter. It seems strange that, with all the opportunities possessed by Indian medical practitioners, they have not before now come to some definite conclusion upon this important subject. Surely it is important enough, and we have a right to expect from them more definite proofs of the opinions they are said to hold than mere criticism of work done by competent observers in Europe and America. Dr Ross holds that "the great Indian fevers—simple continued fever, febricular, remittent, intermittent, enteric fevers—are probably originally not blood diseases at all, but intestinal diseases; and in them the pyrexia is a secondary fever, arising from sepsis or from actual lesions of the digestive tract."

Thus Surgeon-Captain Ross believes that Indian endemic fevers are sister diseases of diarrhœa, dysentery, and hepatitis, the whole cycle being produced by one single condition, that known as intestinal sepsis. The author concludes his paper as follows :—"For the solution of the Indian fever question what we want is clear definition of ideas, careful scrutiny of all assumptions, and a common-sense interpretation of the phenomena before us; and they are much mistaken who imagine that so vast and various a problem will ever be solved by a single *coup de microscope*." The author also writes —"Then, does one really believe that all so-called malarial fever in America, Africa, Europe, and Asia is due to one single species of organism? He must be sanguine indeed who does so. Contagious diseases which are carried about from man to man may be so, but hardly endemic diseases. No; these fevers are probably not zymotic, not hæmatozoic, not specific at all. They are intestinal, and allied to septic fevers."

But is this so? Laveran's researches in Africa were confirmed by Richard in Paris in 1882, by Machiafava and Celli in 1885, by Councilman of Baltimore and Osler of Pennsylvania in 1886, by Golgi also, and finally by Vandyke Carter, and Prof. J. F. Evans in India. So that in Europe, Asia, Africa, and America it has been proved that a single species of organism has been found in intimate connexion with malarial fever, and this leads us to Surgeon-Captain Hehir's researches, which are published in the *Indian Medical Record*. He has examined 2179 fresh and 1102 stained slide preparations of malarial blood from 343 cases of malarial fever, and in only 45 of the cases examined were the results in regard to the presence of the more mature forms of malarial organism negative. We have not space, nor is it necessary, to refer in detail to this paper, but as a matter of fact all the appearances mentioned by Laveran were repeatedly recognised, as well as a special body named by the author the Hæmatomonas Malariæ Stellata, which is a peculiar body having the following characters:—"It is spherical, with a thick, well-defined circumference, and clear hyaline contents, highly refractive, with three to six well marked cilia-like processes passing in a straight line from the surface. These cilia are about $\frac{1}{2000}$ in length, and $\frac{1}{40000}$ in breadth. They contain a pinkish pigment, and move with an oscillating motion. Sometimes the body is irregular in shape; at others it consists of an excessively small spherical, highly refractive, spore-like structure." The author makes some very valuable remarks on the diagnostic importance of the hæmatozoon of malaria, on the clinical value and relations of the discovery of Laveran, and on the use of quinine in malarial diseases.

Further Report and Papers on Epidemic Influenza, 1889-92; *with an Introduction by the Medical Officer of the Local Government Board.* London: Eyre & Spottiswoode, Printers to the Queen's most Excellent Majesty: 1893.

HEREIN, besides the short introduction, will be found a further report on Influenza by Dr Parsons, divided into seven parts, and one on its clinical and pathological aspects, by Dr Klein. We pick out from Dr Parsons' report the following items: "It is to be feared that the contagion of influenza must be regarded as still domiciled with us, and that a renewal of its epidemic activity within the next few years is by no means improbable."

The epidemic was not most deadly in those parts of the country usually shown to be the most unhealthy by the annual death-rate, nor were the deaths from influenza most numerous in those counties where the death-rate from respiratory diseases was greatest. (This, however, may be fallacious, as it is notorious that the respiratory disorders resulting from influenza are constantly regarded as simple attacks.) Those "counties which have a low birth-rate have a high influenza death-rate, and *vice versa*." The second and third epidemics attacked fewer people, but were more deadly in their results. The returns of the Registrar-General do not support the view held formerly that during the prevalence of influenza other epidemic diseases subside. Dr Klein corroborates Pfeiffer and Kitasato as to the presence of a minute non-motile bacillus in the sputa of influenza patients, and regards it as pathognomonic. Several very excellent Plates illustrate the form and life-history of this bacillus.

A Text-book of Medicine, for Students and Practitioners. By Dr ADOLF STRÜMPELL, Professor and Director of the Medical Clinique at Erlangen. Second American Edition, translated from the Second and Third, and thoroughly revised from the Sixth German Edition by HERMAN F. VICKERY, A.B., M.D., and PHILIP COOMBS KNAPP, A.M., M.D., with Editorial Notes by FREDERICK C. SHATTUCK, A.M., M.D. With one hundred and nineteen Illustrations. London: H. K. Lewis: 1893.

WE welcome a second edition of this excellent text-book of medicine revised from the recently published sixth German edition. We admire some other text-books on the subject for greater rhythm and attractiveness in style; and others, again, have a greater originality or audacity; but for good, sound, safe information the volume before us would be hard to beat. Without hazarding any extreme opinions, but steering a middle course, while at the same time commenting on the different theories of the present and the past, the author shows his great learning on every page. In the last edition, also, the latest discoveries, or at anyrate those which have been verified, are incorporated in the text both by the author and by the translators and editor. It would be out of place in criticising the sixth edition of a well-known work to point to the few places where the substance does not agree with our teaching in Scotland, but we would like to draw the attention of the editors to the possibility of improving the illustrations in their next issue. Some of the woodcuts are very rude.

Sciatica: A Record of Clinical Observations on the Causes, Nature, and Treatment of Sixty-eight Cases. By A. SYMONS ECCLES, M.B. Aberd., M.R.C.S.E., etc. London: Macmillan & Co.: 1893.

Sciatic Neuritis; its Pathology and Treatment. By ROBERT SIMPSON, L.R.C.P., L.R.C.S. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent, & Co., Lim.: 1893.

THESE publications are both small, the first being the more pretentious. Dividing Sciatica into the three classes of neuralgia, perineuritis, and neuritis proper, Dr Eccles goes carefully into the good results of absolute rest, electricity, and, above all, skilful massage. His remarks may be read with advantage, and some of his "tips," such as the use of a flat-iron electrode to combine the good of pressure and electricity, and of Schreiber's blocks in training the affected limb during convalescence, are good. Dr Simpson goes over much the same ground, but with bigger strides. The length of some of his sentences would do credit to a German novel of the old school. He also has found rest and massage to be the most useful forms of treatment.

A Treatise on Ruptures. By JONATHAN F. C. H. MACREADY, F.R.C.S. London: Charles Griffin & Co.: 1893.

WE are not inclined to accept the modest statement of the author in his preface to this work, that it is intended to supply the most essential facts concerning ruptures; and that, looking to the vast extent of the subject, it is little more than an outline. We are confident that the majority of readers will find it sufficiently exhaustive, and that they will regard it as a book of reference. It is certainly by far the most complete and authoritative work on the subject with which we are acquainted, and we conscientiously recommend its acquisition by all those who have to deal in practice with the affection of which it treats. The text is clear and concise; the numerous illustrations are reproductions from photographs from Nature; the author's statements are founded on an unique experience, which is freely drawn upon; the statistics of hernia are based largely on the records of the City of London Truss Society, of which those relating to inguinal and femoral ruptures alone comprise some 20,999 individuals.

It is not our intention to refer in detail to the arrangement of subject-matter, or to the views propounded by the author. If there be one chapter open to criticism, it is that on the "operative cure" of hernia, which term we confess to prefer most decidedly to that of "radical cure" in general use. While it is well said that the choice between the subcutaneous and the open operations for hernia must be considered as already decided, we do not think that the principles of operative cure are properly placed before the reader. As a matter of fact, no operation is described in detail excepting that devised by Macewen, which is quoted, in small print, from the original, while the operative cure of femoral hernia is dismissed with four lines, of which two include the statement that the closure of the femoral ring can hardly be made effectually, on account of the proximity of the femoral vein.

The volume is well furnished, and is provided with a complete table of contents, a full index, and an exhaustive list of references to other works and papers on the subject.

A Dissertation on Osteo-Arthritis. By W. H. RUSSELL FOSBROOK, M.D. Lond., M.R.C.S. London: H. K. Lewis: 1893.

ALTHOUGH based upon a comparatively limited personal experience, this work, which was originally written as a thesis for the degree of Doctor of Medicine of the University of London, supplies the practitioner with an able and instructive summary of our knowledge of what is, at the hands of many, rather a neglected disease. The author, while recording very carefully the views of previous writers from Heberden to Charcot, gives ample evidence of having personally observed and studied the malady in question.

He lays great stress on the important part played by anæmia as an exciting factor in individuals possessing what has been termed an arthritic proclivity or inborn predisposition to joint troubles. He ventures to suggest that a deficiency of oxygen in the blood, by acting on the medulla, induces vaso-motor disturbances of an intermittent and persistent character, and specially affecting the joints. He certainly succeeds in making his theory accord with the anatomical peculiarities and clinical features of the disease. He does not regard the existence of a special trophic centre as essential. We recommend the book to our readers as one which will repay perusal.

The Treatment of Constitutional Syphilis. By OSWALD ZIEMSSEN, M.D., Wiesbaden. London: H. K. Lewis: 1893.

THIS little book, written in very good English, is meant to show that syphilis can be treated as well at Wiesbaden as at Aix-la-Chapelle, if not better.

The treatment at these Continental watering-places would not hold its place for a day, so far as syphilis is concerned, were it not for the copious inunction of mercury. The baths and waters are merely used as mechanical means for washing off the mercurial ointment, or washing down doses of iodide of potassium. The following quotation, from the words of a practitioner at Aix-la-Chapelle, is evidence that this view is held by some of the resident practitioners themselves:—"Our sulphur springs would undoubtedly not have gained a great reputation if we could not have got mercury from the druggists' shops."

The thermal springs at Wiesbaden are considered by the author superior to those of Aix-la-Chapelle, on account of the larger amount of chloride of sodium contained in the waters of the former place. The presence of salt is believed to increase the curative action of mercury. The system used abroad in the treatment of syphilis is no better than any other mercurial treatment at home, and is greatly more expensive, as it is considered necessary to have the so-called inunction cure applied by skilled nurses.

Psychopathia Sexualis, with especial reference to Contrary Sexual Instinct: a Medico-Legal Study. By Dr R. von KRAFFT-EBING. Translated by CHARLES GILBERT CHADDOCK, M.D. Philadelphia and London: The F. A. Davis Co.: 1893.

ON concluding the perusal of this book, we could not help asking ourselves the question, "Can the publication of all this filth serve any good purpose?" and the unhesitating answer was "No."

We decline to believe that science calls for the publication in detail of the autobiographies of masturbators, *urnings,* Sodomites, and of those miserable creatures of both sexes who have perverted sexual desires.

There is no doubt that, in very many cases, Krafft-Ebing dignifies the vilest forms of vice by classifying them under diseased conditions, although in a certain number of cases the taint of mental disease may lay a foundation for some of the horrible perversions of sexual instinct described.

Hypnotic suggestion has, since 1890, been added to the other therapeutic means in the treatment of such cases. Here is one of the intra-hypnotic suggestions made in the case of a person who had acquired "contrary sexual instinct," viz., "The command to regard only women as beautiful; to approach them, to dream of them, and to have libido and erection at sight of them." Let us be thankful that the medical profession in this country have not sunk so low as to recommend the substitution of one form of vice for the cure of another.

When speaking of the levying of blackmail upon pederasts in Berlin, the author advises the abandonment of prosecution for pederasty.

We greatly regret that this work was translated.

The Rotatory Movements of the Human Vertebral Column and the so-called Musculi Rotatores. By A. W. HUGHES, M.B. Edin., F.R.C.S., etc., Lecturer on Anatomy in the Edinburgh School of Medicine. Edinburgh: E. & S. Livingstone.

THIS monograph is reprinted with additions from the *Archiv für Anatomie und Physiologie.* It contains the results of a series of observations which were made upon the cadavera in order to determine the amount of rotation which can occur between the various vertebræ. The principal conclusions are that the normal lumbar spine possesses only an extremely slight power of rotation, while this movement is considerable in the dorsal region, amounting in the whole of this portion of the spine to at least half a right angle, and in many cases even to a right angle. The rotation stops abruptly at the junction of the 11th and 12th dorsal vertebræ. Contrary to the usual opinion, Dr Hughes found that the rotation of the cervical vertebra is much greater that that of the dorsal.

The entire work bears evidence of careful observation, and forms a useful contribution to the mechanism of the human skeleton.

Dissections Illustrated: A Graphic Handbook for Students of Human Anatomy. By C. GORDON BRODIE, F.R.C.S. Part II. The Lower Limb, with twenty Coloured Plates and six Diagrams. London and New York: Whitaker & Co.

WE have already reviewed Part I. of this work, which dealt with the Upper Limb. The favourable opinion we then expressed is equally applicable to Part II. It ought to become a favourite Atlas with students.

On Snake Poison; its Action and its Antidote. By A. MUELLER, M.D. Sydney: L. Bruck: 1893.

AFTER giving an historical review, which is well written, although not accurate because not exhaustive, of investigations concerning snake bite in the past, and the unsuccessful attempts to find an antidote, the author details his observations with regard to snake poison, showing it to be a specific nerve poison, depressing and more or less suspending the functions of the motor nerve centres throughout the body, and he advocates the hypodermic injection of strychnine for the cure of the patients. He holds that "it must be administered freely and without regard to the quantity that may be required to develop symptoms of its own physiological action. The doses in which it is injected and the intervals between them must be left to the practitioner's judgment, as they depend in every case on the quantity of snake poison absorbed, the time elapsed since its inception, and the corresponding greater or lesser urgency of the symptoms. If the latter denote a large dose to have been imparted, and it has been in the system for hours [would the patient live so long?], delay is dangerous, and nothing less than 16 minims of liquor strychninæ B.P., in very urgent cases even 20 or 25 minims, should be injected to any person over 15 years of age. . . . . The action of the antidote is so prompt and decisive that not more than fifteen to twenty minutes need to elapse after the first injection before further measures can be decided on. If the poisonous symptoms show no abatement by that time, a second injection of the same strength should be made promptly, and unless after it a decided improvement is perceptible, a third one after the same interval. As the action of strychnine when applied as an antidote is not cumulative, no fear needs to be entertained of violent effects suddenly breaking out after these large doses repeated at short intervals. They are, so to say, swallowed up by the snake poison, and remain latent, except in counteracting the latter. This has now been proved abundantly by scores of qualified observers in all parts of Australia, and still more by Banerjee in India." This treatment ought certainly to be extensively tried.

The Clinical Use of Prisms, and the Decentering of Lenses. By ERNEST E. MADDOX, M.D. Second Edition, Revised and Enlarged. Bristol: John Wright & Co.: 1893.

DR MADDOX's writings have attracted much attention, not only in this country, but also on the Continent and in America.

Only four years have elapsed since the appearance of the first edition of his valuable work on the clinical use of prisms, and we have already a second edition, containing twice as much matter as the first. It may be said at once, that excellent as was the first edition, the present is in every way an improvement upon it, and is indeed a work of which the Edinburgh School may well feel proud.

Writers of monographs, especially on ophthalmological subjects, do not, as a rule, find a large number of readers. That Dr Maddox has been more fortunate than most in this respect, is partly due to the importance of the subject of which he treats, as well as to the meagre consideration which it has received at the hands of authors of general treatises on eye diseases. It is also due to the excellent judgment which he has shown in avoiding any exaggeration of its importance. Though the subject may be a favourite one with the author, it is not treated as a "hobby." There is a noteworthy discrimination to be observed throughout the work between what is practical and what is merely theoretical. This quality is even more evident in the new edition, in which the difficult subject of the clinical application of prisms for diagnosis and treatment is handled in a manner which to few readers will not convey some new and useful information, and which to the majority even of professed ophthalmologists will afford much matter for profitable study.

A Practical Treatise on Materia Medica and Therapeutics, with special reference to the Clinical Application of Drugs. By JOHN V. SHOEMAKER, A.M., M.D., Professor of Materia Medica, Pharmacology, Therapeutics, and Clinical Medicine, College of Philadelphia, etc. In two volumes, Second Edition, thoroughly revised. Philadelphia and London: The F. A. Davis Co.: 1893.

THE first volume is devoted to Pharmacy, General Pharmacology and Therapeutics, and remedial agents not properly classed with Drugs, such as climate, diet, heat, cold, etc., whilst the second volume may be regarded as an independent work upon Drugs. The first edition of vol. I. was published only four years ago, and the first edition of vol. II. only two years ago, and now a new edition of both volumes is published. This shows the popularity of the work. We had occasion formerly to notice very favourably these volumes of Professor Shoemaker, and here it is only necessary to say that the author in this edition has brought the subject well up to date, and includes all the newer remedies, such as animal extracts, etc. We wish these volumes a wide circulation.

A Handbook of Local Therapeutics. Edited by HARRISON ALLEN, M.D. London: H. K. Lewis: 1893.

THIS work is one which deserves a wide circulation, and is a valuable work of reference. It will be especially useful to those engaged in general surgery, dermatology, laryngology, ophthalmology, etc.

The book has really four authors. The General Surgery is by

Dr Richard H. Harte, Pennsylvania; Diseases of the Skin, by Dr Arthur von Harlingen, Professor of Diseases of the Skin, Philadelphia; Diseases of the Ear and Air Passages, by Dr Harrison Allen, Philadelphia; and Diseases of the Eye, by Dr George C. Harlaw, Emeritus-Professor of Diseases of the Eye, Philadelphia. The various medicines are arranged alphabetically, and the *local* actions of the various drugs are, as a rule, succinctly and correctly stated. The book contains much valuable information.

Wright's Improved Physicians, Surgeons, and Consultants' Visiting List. Compiled by ROBERT SIMPSON, L.R.C.P. & S. London: John Wright & Co.

THIS Visiting List for 1894 will be useful to practitioners, especially to those engaged in large practice.

Part Third.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

TRIONAL AS A HYPNOTIC.—In the *Neurologisches Centralblatt,* November 25, 1892, Dr Brie of Bonn gives an exhaustive account of his experience with this recent addition to our therapeutic armamentarium. He describes trional as a white powder similar to sulphonal. It is difficult to solve in water at the ordinary temperature, but is easily soluble in hot water and in alcohol and ether. The watery solution has a slightly bitter taste. He had used it in forty-two cases of insanity, about 300 doses having been administered of 1 to 3 grammes. It was dissolved in hot water, and given half an hour before retiring. As a general rule, sleep followed within an hour. According to the results of his numerous observations, trional possesses an extraordinarily favourable influence. It should be the first drug mentioned and recommended as a hypnotic. It is almost tasteless, is easily administered, acts rapidly, and after-effects are rarely manifested. Its use is indicated in simple insomnia, and also in the sleeplessness of insanity, associated with restlessness and marked excitement.—*Charlotte Medical Journal,* August 1893.

LOSOPHAN.—Recently a compound of iodine and cresol has been brought forward, under the name of losophan, which seems to possess all the essentials of an effective remedy in parasitic diseases of the skin. The combination of iodine and cresol, both of which are powerful antiseptics, in a single remedy argues in favour of its utility, and the experience of Dr Saalfield (*Therap. Monatshefte*) goes to confirm the truth of this statement. This observer employed losophan in a large variety of affections of the skin with very favourable results. In tinea tonsurans of the face, scalp, and body, a 1 to 2 per cent. solution in alcohol and water effected a cure in the vast majority of cases, while in pityriasis versicolor a 1 to 2 per cent. ointment proved very useful. Parasitic sycosis, which, as is well known, is exceedingly obstinate to treatment, was much improved; and in cases of pediculosis capitis or pubis the 1 per cent. solution of losophan was found a convenient and rapid means of destroying the parasite. It would also seem that the remedy is destined to occupy a prominent place in the therapeutic non-parasitic affections of the skin, such as chronic eczema, sycosis vulgaris, acne vulgaris, rosacea, etc.—*Indiana Medical Journal*, August 1893.

ESSENCE OF WINTERGREEN IN THE TREATMENT OF ALOPECIA.—Hallopeau (*Annales de Dermatologie et de Syphiligraphie*, vol. iv., 1893) has made some experiments as regards the value of the essence of wintergreen in the treatment of alopecia. In one case six patches were found on one side of the head, which had been treated with tincture of cinnamon, and had not improved. After one month three of these were treated with essence of wintergreen, while the remaining three were treated daily with frictions with the essence of cinnamon with four parts of ether. As a result of this observation the patches treated with the wintergreen healed immediately, while those treated with the cinnamon showed no signs of improving. In applying the wintergreen, it may be mixed with equal parts of ether, or one part of vaseline to five of the essence. The ethereal solution is very active, and is rather to be preferred. When used, it is to be thoroughly rubbed in the diseased part, and applied once daily. Its beneficial effects result from its producing an inflammation of the integument, and transforming it into an unfavourable medium for the growth of parasites. The application is not painful. —*Therapeutic Gazette*, August 1893.

THE THERAPEUTIC ACTION OF SALOPHEN.—Dr Edmund Koch, in an inaugural dissertation presented to the University of Friedburg, reports a large number of cases treated with salophen, and gives the following summary of his observations:—If we compare the above results, we find that salophen proved most efficient in acute articular rheumatism, where it rapidly and promptly removed the pains, fever, and swelling within a short time. We have met with no case where it failed to act. In efficiency it is almost equal to salicylic acid, over which it has the advantages of not possessing a disagreeable taste and of not being attended by the disturbances so frequently observed during administration of salicylic acid, which so often neutralize the good effects of the remedy. Doses of $\frac{3}{5}$ gramme salophen *pro die* are amply sufficient in the less severe cases. I am also able to confirm the statement of Dr Gottmann, that the more recent the case the more certain will be the effect. Although in acute articular rheumatism the results from the use of salophen were very favourable, they were inconsiderable in chronic rheumatism and arthritis deformans. Occasionally it effected some relief of the pains, but permanent improvement was never observed. As regards the antipyretic effects of the remedy I am unable to give a decision. In the two cases reported, where a high temperature existed, it quite rapidly reduced the fever. At any rate, it may also be tried in cases of fever. Salophen appeared extremely effective in nervous affections of the most diverse character. In these troubles it acted even in small doses, 0·75–2 grammes, with great rapidity, in most cases removing or at least relieving the pain. In neuralgias it seems an excellent remedy, and may be tried as a substitute for other nervines, such as antipyrine, phenacetine, and acetanilid. In minor nervous affections, such as headache, toothache, etc., it is also indicated. These observations I find confirmed in an article by Dr Camier of Elberfeld, which came to my notice after conclusion of my experiments. This observer also tried salophen in various nervous troubles, such as habitual headache, trigeminal neuralgia, sciatica, and hemicrania. His conclusion is that salophen is a prompt analgesic in various neuroses, and that no toxic effects were noted in any of the cases observed by him. As above stated, I have not investigated the antiseptic and disinfectant action of salophen. If in brief I formulate my conclusions, the following may be said:—In acute articular rheumatism salophen has a specific effect, almost as marked as that of salicylic acid. In chronic articular rheumatism it is less effective, but may be employed as substitute for other remedies, since it relieves the pain, at least at the beginning of its administration. In the most diverse nervous disorders it exhibits an excellent analgesic effect. Disagreeable after-effects are never seen in 3–5 grammes, which are amply sufficient.—*Kansas Medical Journal*, July 1893.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Leprosy; Morvan's Disease; Syringomyelia.—The question whether leprosy still exists in those European countries where it was thought to have disappeared, and more especially in France, is one of much importance. Leloir (*Brit. Journ. of Dermatology*, May 1893) has taken it up. He has met with a number of cases the symptoms in which bear a close resemblance to those of nerve or mixed leprosy. Thus in one, a native of Dunkirk, who had never left France, there was complete atrophy of the muscles of the shoulders, arms, and forearms, atrophy of the muscles of the thenar and hypothenar eminences, absolute want of sensibility in the upper limbs, the upper half of the body, and over the neck and face, so much so that he had burnt himself without noticing it, loss of sensibility in the lips and tongue, numerous cicatrices over the body, with ulcerations on the fingers, plantar hyperkeratosis, and ulcerations in the nails. In none of the five cases which he records was there, however, any paralysis of the orbicularis, or anæsthesia of the face. The bacteriological proof was also wanting, though in one he found two bacilli giving the histo-chemical reactions of those in leprosy; but bearing in mind the abundant presence of the bacilli in the lesions of leprosy, he does not attach much importance to this observation. J. Hogarth Pringle again deals with Morvan's disease, the characteristics of which may be summed up as follows:—The complaint is a chronic one, with gradual onset. There is paresis with analgesia of the upper extremities, at first limited to one side, passing then to the other, ending always in the production of one or more whitlows, as a rule painless, followed by rapid necrosis of the phalanges, with mutilation of the hand. The paresis is accompanied by atrophy, attacking the muscles of the thenar and hypothenar eminences, the interossei and muscles of the forearm, seldom of the lower extremity. There may be complete or partial anæsthesia, and loss of sense of heat, while there may be scoliosis. Pringle relates a case the symptoms of which correspond fairly well with those in Morvan's disease, which was under treatment in the Glasgow Royal Infirmary. In it there was fluctuation in the sensory disturbances; on some occasions the anæsthesia and analgesia were wanting, and on others well marked. He thinks that the condition of syringomyelia underlies the disease described by Morvan. There was thickening of the ulnar nerve, but no bacilli were found in the ulcers examined (*Brit. Journ. of Dermatology*, July 1893). In syringomyelia there are cavities in the spinal cord, so situated as to implicate the paths of pain and of the thermic sense, so that sensation of heat and cold is lost, but the sense of touch remains. Gowers (*Clinical Journal*, May 31, 1893) regards Morvan's disease as a variety of syringomyelia, and states that in it there are found similar cavities in the cord, but combined, apparently in all typical cases, with extensive chronic degeneration or degenerative neuritis of the peripheral nerves. Zambaco-Pacha has continued his observations on the presence of leprosy in France, having gone through the western and southern parts (*Annales de Dermatologie et de Syphiligraphie*, Mai 1893). Unfortunately the patients whom he encountered in many cases refused to permit their photographs to be taken, and in all declined to permit him to remove any fragments of the skin or of the nodules of the cubital nerve, hence he was unable to confirm his conclusions by bacteriological examination. Thus at Bagnères-de-Bigorre he met with an indigenous instance of lepra mutilans. Several fingers had dropped off as a result of dactylitis, and analgesia was so pronounced that an incision made to remove a neuroma of the ulnar nerve at the elbow occasioned no pain. At Argelès he found a typical case of tuberculous leprosy, and the photographs which accompany his interesting article convey most distinctly the features of classic though perhaps somewhat modified leprosy. Leloir's conclusions are apparently well grounded. 1. There exist now in France, especially in the north and in Brittany, but to which must now be added, in the south and west, some affections very similar to leprosy. 2. It is possible that these affections are the last traces of the old and degenerated leprosy which overran France and Europe in the Middle Ages, yet it needs further confirmation.

THE FUNCTIONS OF THE GLANDS OF THE SKIN.—Till Unna published his views with respect to the part played by the sebaceous and sudoriparous glands there was a pretty general consensus of opinion. Shortly, he laid down that the office of the sebaceous gland was to lubricate the hairs, that of the sweat, or, as he named them, the coil-glands, was to oil the integument, and to produce the subcutaneous fat in so doing. Dr Wallace Beatty has made these questions the subject of inquiry, and does not support the conclusions arrived at by Unna, except to a limited extent. He has studied them from the comparative standpoint, having made sections of the skins of numerous animals, and tested these with osmic acid. He believes that the sebaceous glands, though largely destined for the lubrication of the hairs, are not solely so, for they occur where there are no hairs, and are disproportionate to the size of the hairs to which they are attached. In only a few sections of the sweat-glands could he find evidence of the presence of fat, and examination of the sweat from the palms, in which locality there are no sebaceous glands, failed to give convincing proof of the existence of fat in the perspiration obtained from there. Though he found fat cells between the coils of the sweat-glands, yet he does not think it likely that the subcutanous fat is secreted by these. The amount of fat does not seem to be at all proportionate to the number of the sweat-glands, and besides, how are we to account for the origin of fat in other parts of the body than the skin. Though in accordance with these researches, the lubricating function of the sweat-glands cannot for the present be regarded as proved, yet the sweat-glands play an important part in keeping the skin soft, owing to the fact that in the epidermis the lumen of the duct, which has there no proper wall, is in direct contact with the epidermic cells and their interspaces. In the otter, in which he found no sweat-glands, columns of fat ascend regularly from the subcutaneous tissue to the basis of the hair-follicles, as held by

Collins Warren as against Unna.—*British Journal of Dermatology*, April 1893.

LICHEN, LICHEN NEUROTICUS, AND PITYRIASIS RUBRA PILARIS.—Prof. von Duhring of Constantinople has set himself to answer three questions—1. What affections belong to the group lichen? 2. Is there a form of lichen of which we can recognise the features in the original description of F. Hebra? Is there a lichen neuroticus? 3. To prove that there is nothing in common between pityriasis rubra pilaris and lichen. He defines lichen as a dermatosis, characterised during its development by isolated or agglomerated papules, which have their seat in the corium, and only secondarily affect the epidermis. They give rise to more or less severe itching; in time more or less intensification of the natural wrinkles of the skin arises, with pigmentation and infiltration. Lichen scrofulosorum is regarded as a tubercular perifolliculitis or lichenoid tuberculosis of the skin. Lichen may be local or universal, the former nearly always chronic in course. The chief form is that known as lichen planus, and the main variety of this is lichen planus verrucosus. Along with it may be classed lichen obtusus, lichen miliaris, and lichen moniliformis. Distinct from lichen planus is lichen neuroticus, a disease which in some respects approximates to lichen ruber acuminatus as originally described by F. Hebra. This runs a severe and acute course, which in its commencement has much less to do with individual papule-like formations than with a kind of acute erythema, an erythrodermia on which either simultaneously or somewhat subsequently minute acuminate papules develop. This erythematous character is, apart from the papules, eventually shown by the diffuse dusky pigmentation of the skin, which persists after cure, and finds its anatomical expression in numerous pigment cells in the corium. In course of time the acuminate papules may run together into flat patches; but we never find in the universal planus form the acute erythema, the erythrodermia of the lichen neuroticus, distinguished by acuminate papules. Lichen neuroticus is a rare variety, rarer than is pityriasis rubra pilaris, though this is far from being of frequent occurrence. Von Duhring relates three cases, one of which proved fatal. Pityriasis rubra pilaris is a chronic inflammatory disorder of the epidermis and its appendages, characterised in particular by hyperkeratosis, the formation of papule-like accumulations of horny material round the openings of the hair follicles and sweat-ducts, with general redness of the integument. In many of its features it resembles psoriasis, near which, indeed, it stands in classification. There is desquamation and marked exaggeration of the cutaneous wrinkles, but without infiltration generally. It may heal spontaneously; though symmetrical, may be localized: yet is more often universal. In some cases there are no subjective symptoms, in others it is accompanied by unbearable itching and pricking. It may continue for a long time without perceptibly affecting the health, and is apparently not dangerous to life. In diagnosis there may be some difficulty in distinguishing it from a chronic scaly eczema; if, however, some oil be rubbed over the skin, the morbid phenomena in eczema nearly wholly for a time disappear, but in pityriasis rubra pilaris, while the scales vanish, the circumpilary elevations, now of a red colour, become more prominent. Anatomically the seat of the lesion in lichen neuroticus is in the cutis, the inflammatory process commencing in the upper layers, rounded prominences forming at the follicular openings, the changes in the epithelium are secondary, there is small-celled infiltration, the vessels are dilated, and there is pigmentary deposit. In pityriasis rubra pilaris the cutaneous glands play an active part, the acuminate, circumpilary papule is the primary part of the disease, the reddening is secondary, the prominences consist solely of the epithelium of the infundibulum, which has undergone excessive keratinization, and of gland epithelium. He concludes that pityriasis rubra pilaris is not a lichen, but a disease *sui generis*, and that the conception of lichen ruber acuminatus formed by F. Hebra arose from his confusing the two diseases above described briefly.—*Monatshefte für praktische Dermatologie*, Nos. 11 and 12, June 1893.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P. Ed., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, and on Midwifery and Gynæcology, School of Medicine, Edinburgh.

Case of Spontaneous Rupture of the Symphysis Pubis.—At this time, when so much is being written about symphysiotomy, a case of spontaneous rupture of the symphysis is of special importance. Dr Oehlschläger's case was one of a primiparous woman, 20 years of age, who had two eclamptic attacks in her labour; and since there was also albuminuria with œdema of the lower limbs, the rapid completion of the confinement was indicated. The promontory was easily felt, and the fœtal head was situated high up in the pelvis, and lay in the transverse diameter. Powerful traction was made with the forceps, and as the head began slowly to descend into the pelvis, a distinct crack was heard. It could be felt that a separation of the pubic bones, to the extent of 3 cms., had occurred. The infant, which was living and weighed 9 lbs., was then easily delivered. There was no return of the eclamptic seizures. A broad, well-padded binder was fixed tightly round the body at the hips, and the spontaneous rupture united quickly and without any manifestations of fever. The patient was able to get up in three weeks, and could soon walk quite well.—*Centralblatt für Gynäkologie*, No. 24, 1893.

A Pessary in the Uterus.—Dr A. Herzfeld narrates a case in which he found a Breisky egg-shaped pessary in the uterus of an old woman. The patient, who was 77 years of age, had five years before had a ball pessary introduced into the vagina for prolapsus. She had had sixteen normal confinements, the last having occurred thirty-eight years ago. She was taught to remove the pessary every month, wash, and replace it herself. For the last five months she was able neither to express the support nor to feel it in the vagina. Dr Herzfeld found on examination that it had slipped up into the uterus, and was palpable at the external os. The cervix was rigid, and so the patient was anæsthetized and the pessary broken up into pieces and removed with some difficulty. The uterine cavity and vagina were washed and packed with tampons. A quick recovery ensued, the cervix returned to its normal size, and after a Schatz pessary had been introduced the patient was dismissed.—*Centralblatt für Gynäkologie*, No. 27, 1893.

NOVEL AFTER-TREATMENT IN A CASE OF PORRO'S OPERATION FOR OSTEOMALACIA.—Dr L. Seeligmann relates how, after he had delivered a patient with far advanced osteomalacia by means of the Porro operation, he applied extension to the lower limbs by means of sand-bags. After eight weeks it was found that the patient had increased 18 cms. in height, that the right lower limb was now as long as the left, that the configuration of the pelvis was improved (the diagonal conjugate, which had measured 8 cms. before the operation, was now 9 cms. in length), and that the spinal curvature was almost normal. The patient is now able to do her work much better than for seven years previously.—*Centralblatt für Gynäkologie*, No. 28, 1893.

A RARE TUMOUR OF THE ORBIT IN A NEW-BORN INFANT.—Dr Courant puts on record a very uncommon case, in which in a new-born and otherwise well-formed male infant there was found in the left orbit a tumour of the size of a small apple. The left eye-ball protruded greatly, and the circumference of the tumour was 14·5 cms. The tumour was removed on the second day of life without narcosis, and the infant made a good recovery. It was a typical dermoid.—*Centralblatt für Gynäkologie*, No. 32, 1893.

AN ELEVEN MONTHS' PREGNANCY.—Bensinger relates a case of protracted gestation in a iii.-para whose previous pregnancies had terminated at the normal period. On this occasion the last menses occurred in the second week of August, pregnancy was diagnosed in September, and delivery took place on the 12th of July of the next year. Some delay occurred on account of the breadth of the infant's shoulders. The child weighed 6 kilogrammes and was 58 cms. in length; the head measured 37·5 cms. in circumference and had an occipito-mental diameter of 15 cms.; and the transverse measurement of the shoulders was 18 cms. The placenta was very large.—*Centralblatt für Gynäkologie*, No. 35, 1893.

STRICTURE OF THE URETHRA IN THE FEMALE.—In a learned memoir Dr Genouville discusses the very rare condition of urethral stricture in the female. He points out that it has two chief causes: infection (blenorrhagia) and traumatism (dystocia). The clinical signs vary from a slight hindrance to the flow of urine to complete retention, and these supervene at an earlier date in the female than in the male. Cystitis and ascending pyelo-nephritis may occur as complications in the one sex as much as in the other. The most commonly employed treatment is gradual dilatation; but Quénu's operation (" uréthromie totale") seems to give a better chance of complete cure. The female bladder is smaller than the male, but it has greater dilatability: it has a smaller anatomical but a larger physiological capacity. The muscular coat of the bladder is thinner in the female than in the male. Stricture of the urethra, therefore, brings about the functional signs of dysuria sooner in the female than in the male. A proof of this vesical inferiority is also found in the physiology of micturition in the female, for the discharge of urine is less frequent but more copious, and great retention occurs often, appearing and disappearing rapidly.—*Archives de Tocologie,* May 1893.

Puerperal Aphasia.—Dr M. Carre reports a case of puerperal aphasia, and compares it with three other observations (one by Bateman, one by Luckinger, and a third by Blanc) which have been published since Poupon gathered together twelve cases in 1885. The condition may have a nervous or a vascular origin. In the instance reported by Carre it was due to heart disease and embolism. The recovery was gradual. With regard to prognosis, there were three deaths in sixteen cases. The result is less likely to be serious in the instances in which hysteria is the cause than in those which are due to albuminuria or to heart disease, embolism, and thrombosis. The aphasia rarely appears during the pregnancy; most frequently it comes on suddenly in the first week of the puerperium. In the cardiac cases the patient should be warned against becoming pregnant again.—*Archives de Tocologie,* July 1893.

Smallpox in Pregnancy.—During the year 1892 thirteen cases of variola in pregnancy occurred in the Aubervilliers Hospital. The details are given by Dr Richardière. In seven cases recovery took place without any interruption of the pregnancy; in three instances abortion occurred, and in two of these the mother died; in two the confinement took place during the course of the smallpox,—in both of these the disease was of a mild type: in one the infant was dead-born, but showed no traces of pustules; in the other it was born alive and took smallpox ten days afterwards; and in one instance a patient, pregnant four months, was attacked by hæmorrhagic variola, and died undelivered. — *Archives de Tocologie,* August 1893.

Reminiscences of the Founders of the Woman's Hospital Association.—Dr Emmet gives some delightful reminiscences of the Woman's Hospital in New York and its founders. The opposition to the hospital centred in one medical man, who maintained that the field was too small a one for a special hospital. "Any one could apply nitrate of silver to an ulceration with a cylindrical speculum, and there was no difficulty in introducing Physic's globe-pessary for prolapsus." This was in 1854. The hospital, however, was founded, and the first patient admitted had a vesico-vaginal fistula, which was operated on by Dr Marion Sims. Of the many hundreds of like cases admitted after her and cured, she alone, after some thirty-four operations, is now incurable. In the autumn of 1855 Dr Emmet was appointed assistant-surgeon, with full power to act in the absence of Dr Sims. A prophetic remark was made by Dr Stevens on the occasion, when Dr Sims wished to open the abdomen of a patient to remove a fibroid: "He felt every confidence in Dr Sims, and had no doubt that he would be successful if he undertook the operation; but he protested in the name of humanity against such a procedure, for if Dr Sims was successful in the removal, it would not be long before every young doctor in the land would be opening the belly of every young woman to see if she had a fibrous growth." Dr John W. Francis was a member of the Consulting Board of the new hospital. He was a great believer in "sarching medicines," and when he was summoned to a case his wife used to call to Mary Ann to "get the doctor's hat, his cane, and the box of triplex pills." "I can recall but a single occasion," says Dr Emmet, "on which Dr Francis seemed to have lost his temper, and then it was sadly out of joint. He had missed his accustomed toddy at noon, and had in addition just learned a disagreeable piece of news. This was to the effect that one of his best patients had been delivered when he had not even suspected pregnancy, and he being away from home when sent for, that some one in the neighbourhood had gotten the case. He came into my office, as he often did when I was not at the hospital, and his first exclamation was: 'Damn these hoopskirts! Young man,' he said, 'there was a time when I went to church, that I could look around me and form some idea of what my income might be during the year. But now, since the invention of these damned hoopskirts, I can no longer judge of the condition of the women. I am away from home when wanted, and some young whipper-snapper is called in and gets the case.' The situation was a clear one to him of personal grievance."—*New York Journal of Gynæcology*, May 1893.

SURGICAL PERISCOPE.

By Kenneth M. Douglas, M.D., F.R.C.S. Edin.

Erysipelas Curative of Sarcoma.—Dr Coley (New York) contributes an extremely interesting paper on this subject, in which, as the result of his observations and experiments, he arrives at the following conclusions:—1. The curative effect of erysipelas upon malignant tumours is an established fact. 2. The action upon sarcoma is more powerful than upon carcinoma in about the ratio of 3 to 1. 3. The treatment of inoperable malignant tumours by repeated inoculations of erysipelas is both practicable and not attended with great risk. 4. The curative action is systemic, and probably due chiefly to the toxic products of the streptococcus, which products may be isolated and used without producing erysipelas. 5. This method should *not be employed indiscriminately* until further experiments have proved its limitations. Dr Coley's method is inoculation by injection of small quantities of bouillon cultures ($\frac{1}{2}$ to 2 grammes) into the tumour. In certain instances the injections, whilst producing slight local and considerable constitutional reaction, did not cause true erysipelas to develop, but improvement occurred; in two patients, after the development of well-marked erysipelas the sarcomata disappeared, recurring in one patient's case twice after disappearance following inoculation. Analyzing all reported cases (a table of which is appended to the paper), Dr Coley finds that of 17 cases of carcinoma 3 were cured, 10 showed improvement, 1 died of erysipelas; of 17 cases of sarcoma, 7 (41 per cent.) remained well and free from recurrence from one to seven years after the attack of erysipelas, 1 died of erysipelas (accidental, not by inoculation). The cases selected for treatment were in nearly every instance recurrent or inoperable. In 8 cases not included in the analysis, treatment by *repeated injections* of erysipelas cultures did not produce erysipelas, but caused marked improvement in the tumours.—*American Journal of the Medical Sciences*, May 1893.

EXPERIMENTAL PLASTIC OPERATIONS UPON THE BLADDER.—Dr Rosenberg (Hamburg) contributes an important article on this subject in Virchow's *Archiv*. The object set before himself by Dr Rosenberg was to determine whether the intestinal wall lent itself to being grafted upon other organs, and more especially on the bladder. The work of Foggi and Tizzoni had already shown the possibility of replacing the bladder by a closed intestinal coil; but the possibility of the engrafting of intestinal wall upon the bladder had not been established, and to this point Dr Rosenberg addressed himself, keeping in view two questions, viz.,the behaviour of the intestinal graft under the new conditions of function and nutrition, and the efficiency of the bladder after the operation. The experimental procedure adopted was as follows:—The abdomen was opened, the first coil of bowel which presented was emptied by digital pressure, and clamped at the ends, the clamps being placed so that a mesenteric artery lay midway between; the coil was then resected, the mesentery being incised so far as was needful to free the coil and leave it attached by a pedicle. The bowel continuity was then restored and the gut returned to the abdomen, while the separated coil was laid open along its free border (*i.e.*, away from the mesentery), thoroughly purified with perchloride of mercury lotion, and wrapped in sterilized gauze, whilst the bladder was prepared for the graft. This was done by incising the roof of the bladder in the earlier, and by resecting more and more of the wall in the later experiments. The detached portion of bowel was then applied to fill in the gap in the vesical wall, and sutured in position, the mucous coat not being included in the stitches. The animals recovered rapidly from the operation, and the functions of the bladder were speedily restored; for a day or two there was tenesmus and incontinence of urine, the excretion containing blood and micro-organisms, which, however, soon disappeared, the urine being by the third day acid and limpid. Eight days after the experiment the animals were in perfect health. On examining the results after two, four, and twelve weeks respectively (the dogs being sacrificed for that end), it was found that the mesenteric artery pulsated strongly, and the union of bladder and graft was consolidated, the mucous surface of the latter being so altered as to resemble the bladder epithelium. The microscopic character of the change is dealt with in the latter part of the paper.—*Annales des Organes Maladies Genito-Urinaires* (trans.), June 1893.

Treatment of Sciatica.—Dr Weir Mitchell recalls attention to the efficacy of splints and firm bandaging in most cases of this affection, where internal remedies and simpler means fail. The side splint must fix both hip and knee, the latter being slightly flexed, the former extended, and the bandage should be of flannel, and reach from foot to groin, the trunk also being fixed to the splint. "There may be left, near the close of this treatment, one or more points of persistent pain, not often severe. These are best treated by counter-irritants, the best being the light touch of a white-hot Paquelin button, or a small blister. The getting up of a severe sciatic case is not unimportant. Motion, the full use of the leg and buttock muscles, and the pressure of the hard edge of a chair or close stool, are likely to bring back pain. Hence, *we do not allow a man to sit at all the first week* that he is up. He must at first stand, and then walk, but always, whether he walk or stand, it must be with the aid of crutches. He may be upright, on a bed, but not seated. Electricity is rarely needed, even if there has been much wasting. With exercise and massage, or without the latter, the muscles easily get strong."—*Ibid.*, July 1, 1893.

Operation for Hare-lip.—Mr Wyeth suggests an important step in operation on cases in which, from the presence of an intramaxillary cleft, the flattening of the ala nasi cannot be corrected, however completely the soft parts be freed and adapted. Seeing the necessity for a level bony foundation on which the nasal cartilages might rest, Mr Wyeth advanced the anterior portion of the upper maxilla of the side on which the cleft and deficiency existed, and so placed the gap in the bone where it was concealed and no longer of moment. "The procedure is this:—After anæthesia is effected, a hole is drilled about one-fourth of an inch from the anterior edge of each of the maxillary bones through the bone, and large enough to permit the introduction of a large, soft, silver wire. The edges, which after the advancement will be in contact, are fastened with cutting forceps or knife, and about half-way back along the alveolar process of the short side, between two teeth, a strong cutting forceps or scissors divides the upper jaw deeply and freely at a right angle to the plane of the alveolar process. Instead of inserting a lever or pry to fracture the piece forward, it is best to carry a very strong cord in the fissure made by the cutting instrument, and pull on this until the fracture is complete and the fragment is advanced. When this is done, a few twists of the silver wire bind the fastened surfaces together and hold the piece in its advanced position. As the soft parts have not been disturbed the bone gets its nutrition from this source, although cut off posteriorly. At least eight weeks should elapse before the plastic work on the lip is undertaken. By this time the nutrition of the bone in its new position is assured."—*Medical Record*, June 24, 1893.

Part Fourth.

MEDICAL NEWS.

CHOLERA AND METEOROLOGY.—At a branch meeting of the British Medical Association at Bombay, Surgeon-Captain H. Herber read a paper on this subject, the summary of which we take from the *Indian Medical Record* for May 1893. "1. There is a rough correspondence in the general terms of atmospheric pressure, anomalies, and cholera in the provinces and in Bombay and Madras (probably in the greater part of tropical India). 2. The hot weather pressure variation is the characteristic one of the year. 3. A fairly close proportion is apparent between the annual cholera ratio and the hot weather anomaly, when the local element of the latter is considered. 4. A relatively high local pressure variation in tropical India as compared with that of extra tropical India corresponds with a higher rate of cholera. And *vice versa.* So much so that an 'absolute negative anomaly' (as in 1883) may apparently become potentially a positive anomaly. 5. The cholera rate is probably influenced also by the strength of pressure variation as shown by persistence through or recurrence after rainy season. Heavy winter and spring fall and accumulation of snow on north-west Himalayas possibly have some influence in increasing cholera, apart from pressure of effects."

DON'T.—Don't try to work on the editor's sympathies. If he is a good editor, he keeps his feelings in the background, and has an eye single to business. His duty is not to relieve distress or gratify individuals' aspirations, but to entertain (and, if possible, sometimes instruct) his readers as well as he can. A magazine is not an eleemosynary institution.—*The Medical and Surgical Reporter*, September 9, 1893.

FLETCHER'S THERMO-URINOMETER.—This is a very ingenious instrument. A sensitive thermometer is blown in one piece into the urinometer, so as to enable the physician, in taking the specific gravity of a specimen of urine, at the same time to assure himself of its temperature. The instrument is fitted into a small leather tubular case, which packs inside a graduated urine-testing cylinder. The whole is fitted in a leather outer case, which can be easily carried in pocket or bag.

ENAMELLED GAS BURNER.—Messrs Fletcher, Russell, & Co., of Warrington, have sent us a specimen of their improved gas burner for boiling purposes. It is made of cast-iron, and is covered by an exceedingly thin film of enamel, applied by a new process of treatment, which effectually prevents rust, cannot be chipped off, and defies even the destructive agency of a red heat. The "Chimatto Enamel," as it is called, is produced in an endless variety of colours, and is suited for the decoration of every description of ironwork.

OBITUARY.

GEORGE PATERSON, M.D., F.R.C.P.E.

THE daily newspapers have duly recorded the death of this estimable member of the medical profession under his full designation of George Andrew Paterson, but he seems early in life to have abandoned the middle name, and was known to a large circle alike of professional and lay friends simply as George Paterson.

He was born in 1811 in Sweden, where his father was a clergyman, and he came for his education to Scotland, entering when a youth at the University of Edinburgh, where he devoted himself to the study of medicine. He was an earnest student, and soon formed a large circle of friends among his contemporaries. He was an ardent member of our much-valued Royal Medical Society, and there cemented many of those friendships which endured to the end of his life. He took an active part in all the business of the Society, especially the private business, and more particularly of its monetary affairs, being for many years the Chairman of the Finance Committee. For his industry and business habits in this capacity he was much esteemed by his fellow students, and when George Paterson had to present the annual report of the Committee over which he presided, there was always as full an attendance as is generally the case in the House of Commons when the Chancellor of the Exchequer presents his budget. Paterson had the merit of making his finance reports clear, and somehow had a knack, even when circumstances seemed a little shady, of imparting to them a *couleur de rose* tint. The Society in 1832 elected him the senior of its four annual Presidents. In fact, there were five Presidents that session, for Mr Robert Newbigging died during his term of office and was succeeded by the late Dr James Vose of Liverpool, the others being Charles Ransford and Douglas Maclagan. The last alone survives.

George Paterson took his degree of M.D. at the University of Edinburgh in 1833. In 1837 he became a Fellow of the Royal College of Physicians; he was in practice in Edinburgh for a few years, and was one of the Physicians of the Royal Infirmary, but then settled as a physician in Tiverton. He did not remain permanently in Devonshire, for in 1862 he was appointed a Deputy Commissioner in Lunacy for Scotland, the duties of which he discharged with his usual ability and conscientiousness, gaining and retaining, as he always did, the esteem and regard of those who were associated with him. He resigned the appointment in 1877, and then, with intervals of Continental travel, resided in Edinburgh. Dr Paterson was twice married,—first to a sister of John Balfour, the former Professor of Botany, and then to Miss Clark of Tiverton, who also predeceased him. He left no family.

Two years ago he had a severe attack of paralysis, which greatly impaired his powers of utterance, and some little time ago he sustained a good deal of injury from a carriage accident. There can be little doubt that this helped to hasten his end. He died at 4 Coates Crescent on the 18th of October 1893.

Dr Paterson wrote little and read much,—medicine, classics, and Continental literature. He travelled a good deal during the latter period of his life,—one of his last journeys, before illness incapacitated him, being to Italy, where the antiquities of Rome, and more especially its ecclesiastical establishments, were particularly attractive to him, as were also Naples and Pompeii.

It is not as a contributor to the literature of his profession, but as a charming personality, that we pay our tribute to the memory of George Paterson. He made many friends and he lost none. He was an esteemed member of that very select coterie, the "Æsculapian," of which he was *custos morum*,—a sinecure office, but a sort of appeal court in the few cases where a discussion arose as to a question of etiquette or ethics. His imperturbable good nature and honesty of purpose made him the favourite of all his associates, who with much regret accepted his resignation on the score of bad health, but on the score of personal regard retained his name on its list as an emeritus Æsculapian. His rather tall and very slim figure, especially when he was a young man, gave occasion to many nicknames and jests which his genial good nature enabled him to appreciate at their true value. He was an excellent and fluent speaker, and had about him a quiet spice of humour, such as sparkled out in his well-known ode on a former Professor and a lost sixpence, which he used, when called upon, to recite with much gusto. He was a keen Conservative, but never let politics, or for that matter anything else, come between him and his friendships. He was ecclesiastically a High Anglican Churchman, and took a warm interest in the affairs of the Scottish Episcopal Church. He was comparatively unknown to a great part of the younger members of the medical profession,—his retiring habits, his frequent absences from Edinburgh, and latterly his impaired health, keeping him out of their ken; but there are not a few who have survived him, who can look back on the memory of George Paterson not merely with the regard of friendship, but with the love and esteem of brotherhood.

A. D. M.

DR WILLIAM STEWART IRVINE OF PITLOCHRY.

DR WILLIAM STEWART IRVINE of Pitlochry died at his residence, Craigatin, on October 14th, 1893. He was a splendid specimen of the very highest type of a country Doctor. Taking the M.D. Glasgow sixty years ago, and the Licence of the Faculty in 1832, he has practised in the Vale of Athole for more than fifty years with the greatest acceptance. With education, culture, and refinement, he took his place with dignity in the best society, and his constant kindness and devotion to his work endeared him to the poor of the whole district. His reputation gave him almost the position of a consultant in his own division of Perthshire, and till his health failed from sheer overwork, his professional career was both busy and successful. Few men will be more missed in his own district than the good "old Doctor."

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

"JEWISH" CRUELTY TO CATTLE.

SIR,—I have long protested against the Jewish method of slaughtering cattle, which consists in—

1. Needlessly frightening, and more or less painfully *casting* or suddenly and violently throwing the animal on its side, which may possibly even fracture a limb, etc.

2. Next, by an iron rod forcibly securing and twisting its head backwards to extreme tightness, an act of revolting cruelty.

3. By bleeding the more or less conscious animal to death.

4. Thus a calf killed by the Jewish plan may suffer seven minutes' avoidable acute agony, whilst slaughtered in the Christian manner its insensibility is intense and immediate, and its death rapid and painless.

5. Omitting the expeditious, painless, humane, Christian operation of stunning the animal with a mallet or *piercing its brain* with a pole-axe *punch*, thus producing immediate intense insensibility, and then *pithing*, which consists in breaking up the brain and spinal cord with a clean cane or wire, at once pushed through the hole made by the pole-axe punch.

Breaking up the brain abolishes sensation and volition.

Destroying the spinal marrow where it joins the brain arrests muscular movement.

Simultaneously wrecking the substance of the brain and spinal cord or marrow is instant death, which is the practice and procedure of the Christian slaughterer of animals.

Sometimes, instead of pithing, the spinal cord is cut close to the brain.

The Jewish or cattle cut-throat system is bungling, brutal, and barbaric; because it omits to stun or pierce the brain, and to break up the brain and spinal marrow or to cut the spinal cord close to the brain.

6. About May 1890 I noticed that though in certain "Jewish" slaughter-houses, after the *schauchet*, or paid professional Jewish cattle cut-throat, had divided the throat and its neighbouring vessels of the animal, that then the Christian butcher, apparently WITHOUT ORDERS FROM THE JEWISH AUTHORITIES, mercifully cut the creature's spinal cord near its brain.

7. Because of *ante-mortem* changes in the blood, etc., due to avoidable pain and fright, or fear, fatigue, "fever," "Jewish" meat seems somewhat more prone to early decomposition, and contains rather more blood than Christian meat.

During 1891 the French press discussed the advisability of prohibiting as a food the meat of bulls taken straight from public fights for slaughter by Paris butchers.

Animals exhausted by excessive exertion or fright die in a *quasi* "feverish" state, supplying a more or less inferior food, which sometimes, from changed chemical conditions, is so unhealthy that it may even be poisonous.

German sportsmen know that stags hunted to death yield a noxious venison, which is refused and rejected as food alike by the half-starving local peasants and their equally famished dogs. Animals caught alive in traps, especially after long imprisonment, owing to prolonged pain and fright, furnish also an inferior class of meat, which is prone to early decomposition. Wild hares and rabbits run to death may supply similar bad food. Being long crushed, injured, and frightened, netted fish are more liable to early putrefaction than hooked fish, which are killed quicker.

Merely for the sake of tradition and superstition, probably handed down from the priests of ancient Egypt, the orthodox Jews still retain a custom opposed alike to modern science as well as to humanity.

The *schechita*, or slaughtering of cattle according to the antiquated Jewish ritual, puts a lever in the hands of agitators who are anxious to make capital against a race rather than against a religion.—I am, Sir, yours, etc.,

J. LAWRENCE-HAMILTON, M.R.C.S.

30 SUSSEX SQUARE, BRIGHTON,
October 1893.

PUBLICATIONS RECEIVED.

WILLIAM ADAMS, F.R.C.S.,—On the Surgical Treatment of Deformities. Baillière, Tindall, & Cox, London, 1893.

Abstract of the Report of the Leprosy Commission in India, by N. H. Choksy. Baillière, Tindall, & Cox, London, 1893.

ARTHUR J. M. BENTLEY, M.D., etc.,—Bèri-Bèri: Its Etiology, Symptoms, Treatment, and Pathology. Young J. Pentland, Edin. and Lond., 1893.

CHARLES H. BURNETT, A.M., M.D.,—System of Diseases of the Ear, Nose, and Throat. 2 Vols. H. K. Lewis, Lond., 1893.

BERNARD E. BROADHURST, F.R.C.S.,—On the Nature and Treatment of Talipes Equino-Varus or Club-Foot. J. & A. Churchill, London, 1893.

C. GORDON BRODIE, F.R.C.S., etc.,—Dissections Illustrated. Part 2: The Lower Limb. Whitaker & Co., London and New York.

BROWN'S "South Africa." A Practical and Complete Guide for the use of Tourists, Sportsmen, Invalids, and Settlers. Sampson Low, Marston, & Co., London, 1893.

Bulletin of the Harvard Medical Alumni Association, No. 5. Report of the Third Annual Meeting held in Boston, June 1893.

JOHN FRANCIS CHURCHILL, M.D.,—The Stœchiological Cure of Consumption and Diseases of the Respiratory Organs. David Scott, London, 1893.

FRANK CLEMOW, M.D. Edin.,—The Cholera Epidemic of 1892 in the Russian Empire. Longmans, Green, & Co., London, 1893.

M. CLIFFORD, L.R.C.P. Lond.,—Circumcision: Its Advantages, and How to Perform it. J. & A. Churchill, London, 1893.

EDWARD COTTERELL, F.R.C.S. Eng., etc.,—Syphilis: Its Treatment by Intra-muscular Injections of Soluble Mercurial Salts. John Bale & Sons, London, 1893.

Prof. D. J. CUNNINGHAM, M.D., D.Sc., LL.D.,—Manual of Practical Anatomy. Vol. 1. Young J. Pentland, Edin. and Lond., 1893.

THOMAS CRISFIELD,—The Value of Hypnotism. London, 1893.

H. BRYAN DONKIN, M.D. Oxon., F.R.C.P., etc.,—The Diseases of Childhood (Medical). Charles Griffin & Co, Lim., Lond., 1893.

Sir DOUGLAS GALTON, K.C.B., LL.D., F.R.S., etc.,—Healthy Hospitals: Observations on some Points connected with Hospital Construction. Clarendon Press, Oxford, 1893.

SAMUEL GEE, M.D., etc.,—Auscultation and Percussion. Fourth Edition. Smith, Elder, & Co., Lond., 1893.

Guy's Hospital Reports. Vol. 49. Edited by W. Hale White, M.D., and W. H. A. Jacobson, M.A. J. & A. Churchill, London, 1893.

Gray's Anatomy: Descriptive and Surgical. Thirteenth Edition. Edited by T. Pickering Pick. Longmans, Green, & Co., London, 1893.

W. D. Halliburton, M.D., F.R.S., etc.,—The Essentials of Chemical Physiology. Longmans, Green, & Co., London, 1893.

Reginald Harrison, F.R.C.S.,—Lectures on the Surgical Disorders of the Urinary Organs. Fourth Edition. J. & A. Churchill, Lond., 1893.

D. Berry Hart, M.D., etc.,—Selected Papers in Gynæcology and Obstetrics. W. & A. K. Johnston, Edin. and Lond., 1893.

Richard H. Harte, M.D., Arthur V. Harlingen, M.D., Harrison Allen, M.D., and J. C. Harlan, M.D.,—A Handbook of Local Therapeutics. H. K. Lewis, London, 1893.

Arthur Hill Hassall, M.D.,—The Narrative of a Busy Life: An Autobiography. Longmans, Green, & Co., Lond., 1893.

Frederic W. Hewitt, M.A., M.D. Cantab., —Anæsthetics and their Administration. Charles Griffin & Co., London, 1893.

Alfred W. Hughes, M.B., etc.,—The Rotatory Movements of the Human Vertebral Column and the so-called Musculi Rotatores. E. & S. Livingstone, Edinburgh.

W. H. A. Jacobson, M.Ch. Oxon, F.R.C.S., —The Diseases of the Male Organs of Generation. J. &. A. Churchill, London, 1893.

Sir William Jenner, Bart., G.C.B., M.D., etc.,—Lectures and Essays on Fevers and Diphtheria, 1849 to 1879. Rivington, Percival, & Co., Lond., 1893.

Prof. Paul Lefert, — La Pratique des Maladies des Enfants dans les Hopitaux de Paris. J. B. Baillière et Fils, Paris, 1893.

J. Wickham Legg,—A Guide to the Examination of the Urine. Seventh Edition. Edited and Revised by H. Lewis Jones, M.A., M.D. H. K. Lewis, Lond., 1893.

Prof. K. B. Lehmann,—Methods of Practical Hygiene. Translated by W. Crookes, F.R.S. 2 Vols. Kegan Paul, Trench, Trübner, & Co., London, 1893.

Local Government Board,—Further Report and Papers on Epidemic Influenza, 1889–92. London, 1893.

Arthur Macdonald,—Abnormal Man; being Essays on Education and Crime and Related Subjects. Bureau of Education, Washington, 1893.

Thomas More Madden, M.D., F.R.C.S. Ed., —Clinical Gynæcology: being a Handbook of Diseases peculiar to Women. Baillière, Tindall, & Cox, Lond., 1893.

Thomas More Madden, M.D., etc.,—A Handbook of Obstetric and Gynæcological Nursing. Fannin & Co., Dublin, 1893.

Ernest E. Maddox, M.D.,—The Clinical Use of Prisms; and the Decentering of Lenses. John Wright & Co., Bristol, 1893.

Manual of the United States Hay-Fever Association for 1893.

Elias Metchnikoff, — Lectures on the Comparative Pathology of Inflammation. Translated from the French by F. A. and E. H. Starling, M.D. Kegan Paul. Trench, Trübner, & Co., Lond., 1893.

James Oliver, M.B., etc.,— Manual of the Diseases peculiar to Women. J. & A. Churchill, Lond., 1893.

R. Douglas Powell, M.D. Lond., etc.,—On Diseases of the Lungs and Pluræ, including Consumption. H. K. Lewis, London, 1893.

Report upon the State of Public Health in the City of Dublin for the year 1892, by Sir C. A. Cameron, 1893.

H. Leslie Roberts, M.D.,—Introduction to the Study of the Mould-Fungi Parasite on Man. Liverpool, 1893.

St Thomas's Hospital Reports. New Series. Edited by Dr T. D. Acland and Mr Bernard Pitts. J. & A. Churchill, London, 1893.

Morton Smale, M.R.C.S., etc., and J. F. Colyer, L.R.C.P., etc.,—Diseases and Injuries of the Teeth. Longmans, Green, & Co., London, 1893.

Robert Simpson, L.R.C.P., L.R.C.S.,—Sciatic Neuritis: its Pathology and Treatment. John Wright & Co., Bristol, 1893.

Prof. M. Allen Starr, M.D., Ph.D., etc., —Brain Surgery. Baillière, Tindall, & Cox, London, 1893.

J. Cleasby Taylor, M.D. Edin., etc.,—The Health Resorts of the Canary Islands in their Climatological and Medical Aspects. J. & A. Churchill, Lond., 1893.

The Sixty-sixth Annual Report of James Murray's Royal Asylum, Perth, 1893.

The British Guiana Medical Annual and Hospital Reports. Demerara, 1893.

Thirty-fifth Annual Report of the General Board of Commissioners in Lunacy for Scotland. 1893.

Transactions of the Obstetrical Society of London. Vol. 35 for the year 1893, Part 2.

Transactions of the Third Session of the Intercolonial Medical Congress of Australasia. Edited by L. Ralston Huxtable, M.B., 1893.

Augustus D. Waller, M.D., F.R.S.,—An Introduction to Human Physiology. Second Edition. Longmans, Green, & Co., London, 1893.

Edward F. Willoughby, M.B. Lond.,—Handbook of Public Health and Demography. Macmillan & Co., London and New York, 1893.

Prof. I. Burney Yeo, M.D., F.R.C.P.,—A Manual of Medical Treatment, or Clinical Therapeutics. 2 Vols. Cassell & Co., Limited, Lond., 1893.

Part First.

ORIGINAL COMMUNICATIONS.

I.—VALEDICTORY ADDRESS.

By Professor A. R. SIMPSON, Retiring President of the Edinburgh Obstetrical Society.

GENTLEMEN,—Before I leave this now familiar seat, it becomes me to offer you my heartfelt thanks for the favour you showed me in making me a third time your President, and for the kindness and courtesy that have made my tenure of the office an unalloyed pleasure. There are positions of honour that entail a heavy burden of service. In this Society the energy of the Secretaries and the enthusiasm of the other Fellows give its Presidents full enjoyment of the dignity and sweets of office, enhanced by the consciousness that they are singularly free from care.

RETROSPECT.

When I was admitted to the Society five-and-thirty years ago, its membership was small, and it seemed to me to be composed entirely of grave and reverend seniors. As I look around me now, not only do I see it grown in numbers, but it seems to me to have put on an aspect of perennial youth. Everything about it betokens vitality and vigour. The balance-sheet which our so successful Treasurer, Dr Craig, has submitted to us, shows that after all expenses have been paid, and a donation of five guineas made to the British Institute of Preventive Medicine, and a copy of the handsome Volume XVIII. of our Transactions placed, free of charge, in the hands of every Honorary and Ordinary Fellow, he has been able to add about £30 to our accumulated capital. The balance at the credit of the Society, which was only £20, 12s. 11d. when he took up the duties of the office, has grown and grown during the eighteen years of his skilful guidance of our finances, till it now amounts to £264, 7s. 11d.

This satisfactory state of the finances is due to the yearly additions made to our ranks by the younger members of the profession, as many as thirty-four having joined us last session. So that with thirty-nine Honorary Fellows, eighty-three Corresponding Fellows, and three hundred and seventy-nine Ordinary Fellows, we have to-night a total membership of just over five hundred.

THE FIRST SECRETARY.

The number is now but small of the veterans who first banded themselves together to form the Society, and only a few weeks ago the profession lost one of those who was most active in those early days, in the death of Dr George Paterson. His name had for some years disappeared from our roll because, in course of time, he devoted himself to another department of medicine, and became a Deputy Commissioner in Lunacy. But it is fitting that we should remember the service that he rendered to our Society when it was originated. Sir Douglas Maclagan, in a characteristically genial notice of him in the current number of the *Edinburgh Medical Journal*, tells what a conspicuous part he played in the doings of the Royal Medical Society. He might have told also that when on Saturday, December 4th, 1839, "a meeting was held in the New Town Dispensary, Thistle Street, for the purpose of considering the propriety of establishing an Obstetrical Society in Edinburgh," there were "present Drs Fairbairn, J. Moir, Pagan, Peddie, Purdie, C. Bell, Ransford, G. Paterson, and Messrs Sidey and Kennedy—Dr Fairbairn in the Chair." The quotation I make is from the first volume of our minutes, which goes on to say, "Drs Ransford and Paterson stated that, acting on the expressed wishes of several of those engaged in obstetric practice in Edinburgh, they had issued the circular summoning this meeting, and that besides those now present notes had been sent to several other practitioners, including Drs Dumbreck, Farquharson, Lewis, Malcolm, Graham Weir, Ziegler, Beilby, and J. S. Combe, who, with those above mentioned as present, and with Drs Renton and Alexander Wood,—in all, twenty—are the original members of the Society." The minute of this first meeting, and indeed of nearly all the meetings of the Society for the first six years of its existence, are in Dr Paterson's handwriting. For during all that time he was the acting Secretary, and for part of the time he did the work of Treasurer as well. The minutes show him also contributing to the Society's Transactions cases of inflammation and abscesses of the uterine appendages, and communicating a paper by his friend John Reid, embodying his famous observations on the structure of the placenta. The Society met several times at his house in the days when it was wont to hold its meetings in rotation in the houses of the members, and, as was to be expected, from his geniality of disposition he was present at the first dinner of the Society in Clark's Hotel at Newhaven in July 1845. At the first meeting of the Society in January 1847 Dr Cumming, who succeeded him in the office of senior Secretary and Treasurer, minutes that "on the motion of Dr Simpson, the thanks of the Society were unanimously voted to the late Treasurer." Let us follow the example of those who could best appreciate the value of his work, and offer to his memory the tribute of our gratitude.

ORDINARY FELLOWS DECEASED.

Of Ordinary Fellows we have lost Dr Stewart of Kirkwall, who joined us in 1879, and Dr Milne Chapman of Inverness, who became a Fellow in 1881, and who, during his residence in Edinburgh, was a regular attendant at our meetings, and made valued contributions to our debates. But the loss which comes home to us most keenly arises from the death in August last of Dr James Young. Of him also an excellent éloge has appeared in the *Edinburgh Medical Journal* for September, which faithfully gives us the impression of an earnest, industrious, and amiable man. The writer brings out admirably the value of the services he rendered to our Society, not only as an Ordinary Fellow in the many subjects he brought before our meetings, and the part he took in our discussions, but in filling the offices of Treasurer and of Vice-President, and especially in the important help he gave to Dr Peel Ritchie in connexion with the preparation and publication of the first volume of our Transactions. The practice to which he succeeded on the death of his father had in it a large obstetric element which greatly increased in the hands of our friend, who had a special interest in midwifery and the diseases of women and children; and his eager desire to keep himself abreast of obstetric advances, and his delight in sharing with his fellow-practitioners whatever object of interest came under his own observation, kept him for long years amongst the most regular and assiduous attendants at our meetings. Happily, before he was taken from us, he had introduced two sons to our fellowship; while we mourn his loss, we cherish the hope that Dr Richard Erskine Young will successfully continue through another generation the faithful and fruitful service to God and man that were rendered in their time by his father and his grandfather.

A Corresponding Fellow.

In the year 1857 the name of a young Sheffield doctor was added to the list of our Corresponding Fellows, on the proposal of Sir James Simpson, seconded by Dr Moir. Dr J. H. Aveling, from the outset of his career, devoted himself to the study of obstetrics and gynecology, and in many ways he made valuable contributions to the advancement of the subjects that interest us here. It was the exhibition of an instrument constructed on the principle of the lithotrite which he had contrived for the safe division of the pedicles of intra-uterine polypi, that led to his adoption into our Society. He had an inventive mind, and made a suggestion of great and permanent value in the treatment of chronic inversion of the womb, when he showed the necessity of having a repositor constructed with curves adapted to the pelvic canal, which could allow of continuous elastic pressure being kept up on the displaced organ. The use of the instrument he introduced for this purpose gives better results than any other kind of treatment in some of these troublesome cases.

This same tendency led him to a careful study of the construction of the most important implement of the obstetrician's armamentarium, the most important, indeed, in the hands of the general practioner,—I mean the midwifery forceps. His work on the curves of the forceps is a masterly production. The instrument he got made, and which he used in practice, is scientifically constructed, and practically serviceable. It embodies all the elements requisite for safe grasp of the head in every part of the parturient canal, and for making traction along the axes, and but for the introduction of the Tarnier forceps, which has the further advantage of furnishing a guide at every point for the line of traction, I do not doubt that Aveling's forceps would have taken possession of the field in Britain.

That paper of his on the forceps reveals another of his varied gifts,—his love, namely, for historical research, and his power of tracing inventions to their source; and it is with something of patriotic pride that he claims for England the discovery of the value of the various curves of the forceps. Thus he showed that Benjamin Pugh, of Chelmsford, used forceps with the pelvic curve seven years before the date at which Levret is usually credited with its introduction. The perineal curve, the first hint of a compensation curve, was originated by Dr Robert Wallace Johnston; and it was quite independently of the work of Hubert that he himself, in 1868, proposed the use of the forceps with the full handle-curve which could permit of proper axis-traction. This power of historical research is most distinctly seen in his interesting history of the Chamberlens, in which he unearths the secret of the first invention of the forceps, and traces it, with the highest degree of probability, to Peter, eldest son of the Huguenot William Chamberlen, who fled from Paris with his family to escape the massacre of St Bartholomew in 1569. But his antiquarian pursuits were not confined within the domain of midwifery, for he published some interesting memorials of William Harvey, and he wrote a history of Roche Abbey. He took a deep interest, moreover, in the question of the proper training of midwives, and published a work on *English Midwives: their History and Prospects*, which is a mine of information regarding the women who in the past have made a name for themselves in this department, and contains valuable suggestions as to their proper training and registration.

There were other ways in which Aveling's literary and organising faculties enabled him to aid the advances and to play a not unimportant part in the general progress of obstetrics and gynecology. For he took a leading part in the establishment of the *Obstetrical Journal of Great Britain and Ireland*, of which he was the first editor, and which was the medium of collecting and diffusing much valuable information during the years of its publication. *The British Gynecological Journal* is in some sense the continuation of it, being the Journal of the British Gynecological Society, in the foundation of which Dr Aveling had a prominent place. When we remember, further, that in Sheffield, he had a hand in the foundation of the Jessop Hospital for Women, and that when he came to London he started a small hospital which has developed into the flourishing Chelsea Hospital for Women, we recognise that he was a man who played a worthy part among the obstetricians of his time, and whose name was an ornament to the roll of our Society.

One more memorial notice, and I have done.

The Father of Ovariotomy.

In 1882 our Society did itself a too long-delayed honour in adding the name of Charles Clay of Manchester to the list of its Honorary Fellows. Dr Clay had made for himself an honourable record through his long service as a lecturer on midwifery in Manchester and through the many contributions he had made to obstetrics and the diseases of women. But it is especially because of his boldness and success in the removal of diseased ovaries that he will be held in lasting remembrance, and that he has come to be spoken of in Britain as "The Father of Ovariotomy." The long war that was to eventuate in the establishment of ovariotomy among the justifiable operations of surgery came to a close in Edinburgh just thirty years ago. The story of that battle as it was fought on the floor of the Medico-Chirurgical Society was so graphically told by Dr G. W. Balfour in his Valedictory Address to that Society in 1883, that I dare not attempt to retail it now. But in the year that has witnessed the death of the foremost champion in the long drawn-out ovariotomy war—for Dr Clay died on the 19th of September last, in the 92nd year of his age—it is becoming that we should try to realize what our profession and our common humanity owe to the man who took up abdominal section when it was a dreaded and discredited procedure, and wrought on and fought on, often amid opposition and abuse, but with gradually growing success, till younger hands took it up, and he lived to see it take the highest place among the proud achievements of modern surgery.

Lizars, disheartened by his own ill success and cowed by the denunciations of his surgical colleagues, had for many years ceased to open the abdomen, when in 1842 Clay began his ovarian career. For more than a decade he had the field almost entirely to himself. In January 1856 he sent to this Society a history of the result of sixty-nine cases of ovariotomy. Debates on that theme were tame with us here in comparison with the discussions that called out all the eloquence and enthusiasm alike of surgeons, obstetricians, and physicians in the sister Society. Perhaps because the obstetrician is so much in the habit of welcoming strangers, the obstetric mind is more hospitable to new suggestions and more ready to accept new ideas as to treatment than other minds. At any rate, Dr Clay's statistics were here received with respect and gratitude, and, as the minute-book shows, Dr Menzies and Dr

Moir related cases illustrative of the dangers of first tappings. Now, these fatalities of first tappings were among the strongest arguments adduced for the necessity of having recourse to the more radical procedure. Sir James Simpson, who read Clay's communication, had for years been one of the most eager and effective advocates of the operation. He had ten years previously suggested to Clay the desirability of applying to his operation, which he had been in the habit of designating "peritoneal section," the now familiar name of ovariotomy, and year after year he discussed the subject before his class in a style that prepared most of his students to anticipate the coming triumph, and stimulated some of them to take a share in bringing it about. Even as early as November 1843 our minutes record that he made some remarks on the diagnosis of ovarian tumours and the results of the recent operations in England for the removal of the ovaries, stating that since October 1842 twelve cases of extirpation of the ovary have been recorded, of which only two had died; but that two deaths had occurred where the abdomen had been opened and no ovarian disease present. He thought that the sound would be helpful in the avoidance of diagnostic errors.

It is extremely difficult for a generation that is growing almost reckless in opening the abdominal cavity to realize the dread of the procedure that possessed the spirits of their predecessors. The fear was such that it led great surgeons not only to taboo the operation, but to denounce the operators. In the communication made to our Society, Clay could tell of 69 operations with 48 recoveries and 21 deaths. He indicated further that the mortality had lessened with his growing experience. In the first 20 cases there had been 8 deaths $= 1$ in $2\frac{1}{2}$. In the second 20 there had been but 6 deaths $= 1$ in $3\frac{1}{3}$; and in the last 29 cases only 7 deaths $= 1$ in $4\frac{1}{7}$.

Yet in the November of that same year (1856), there was a long discussion in the Academy of Medicine in Paris on the treatment of ovarian tumours, continued through several sittings of the Academy, and the whole discussion turned upon the palliative treatment, or the conditions under which injections of iodine should be had recourse to with the expectation of obtaining cures not followed by relapse. Ovariotomy is for the most part ignored, and where the orators do refer to it, the great surgeons of the day speak of it only to dismiss it with scorn. Said Malgaigne, "There has been much talk of the extirpation of diseased ovaries, an operation which seems to me to be too radical, and of a nature to put the patients too absolutely beyond the chance of a relapse. Alleged statistics prove nothing; one knows the worth of statistics which collect all the successes and omit all the reverses." Cruveilhier did not think, though the operation had been frequently practised with success in England and America, "that this bold operation should be naturalised in France. Success," he said, "does not always justify rash undertakings." "In spite of statistics," said Huguier, "we repel it in a manner almost absolute;" and Velpeau declared that "extirpation of the ovaries was a frightful operation which ought to be proscribed even if the cures that had been announced were real." Cazeaux alone—now, Cazeaux was an obstetrician—said, "I cannot quit this tribune without entering a protest against the anathema launched by several against extirpation of the ovaries. Before being proscribed, it should be inquired into, and it has not been inquired into sufficiently."

About the same time one of the famous debates on the subject came off at a meeting of the Edinburgh Medico-Chirurgical Society, when Mr Edwards gave the history of a case in which he had operated and which had terminated fatally. On that occasion, Dr Matthews Duncan, the one obstetrican who here took rank among the opponents of ovariotomy, made a very able speech, the conclusion of which, however, was simply that "we were forced to resort to the opinions of great and wise surgeons—and they condemned the operation." One of our great and wise surgeons at that meeting, with what he admitted to be a certain malapropism, characterised *abdominal* surgery as *abominable* surgery; and another of them said to Dr Thomas Keith when he began his brilliant career as an ovariotomist a few years later, "Fellows like you should simply be handed over to Mr Maurice Lothian." And Maurice Lothian was the Procurator-Fiscal. The two were respectively Professor of Systematic and Professor of Clinical Surgery, much given to fighting with each other about everything else, and having as their one common enemy ovariotomy and the ovariotomists. The splendid successes of Sir Spencer Wells in the intervening years were emboldening other operators and inducing surgical writers to give the operation a place in their text-books. But, as I said, it is only thirty years ago that the long ovariotomy war, begun, as we have seen, in 1843, came to an end in Edinburgh. The opposition to it began to die down when, in 1863, Dr Thomas Keith was able to lay before the Medico-Chirurgical Society the records of his first six cases. *The Medical Times and Gazette* of August 8th of that year has a humorous account of the meeting at which Keith read his paper, sent to it by its Scottish correspondent. It is in a quizzing mood that the correspondent says, "To you in London the operation and the subject are stale." For but a few months before, Dr Robert Lee had made a communication to the Royal Medical and Chirurgical Society in which he considered it "demonstrated that ovariotomy is an unjustifiable operation where the life of the patient is not in immediate danger, and where there is not a great probability of the life of the patient being saved by the removal of the disease." In the subsequent discussion he said, "He had recently witnessed the performance of the operation by Mr Spencer Wells, and a most horrible sight it certainly appeared. The bowels gushed out of the wound, reminding him of the fate of Judas Iscariot. Yet the patient was reported to have recovered, thus showing how very great an injury might be inflicted on the abdominal viscera without causing death, which he considered a striking physiological phenomenon." The Edinburgh correspondent was no doubt quite familiar with all these things that were being said and done in London when he wrote, "To you in London the operation and subject are stale; to us they are not. The last case," he continues, "brought before the Society was one by Edwards six years ago. Then every one was against the operation; now every one is for it. Dr Matthews Duncan said on this occasion that his mind could not conceive the possibility of successful ovariotomy, until Dr Keith, who lives in his own immediate neighbourhood, had '*brought it to his own door;*' all the cases of Clay, Brown, Wells, etc., had not entered his imperturbable and impassive mind. Dr Keith's 120-pounder had to be rolled up against his door in Charlotte Square before the portals of that stolid imagination could open to a recognised fact. But we do not believe Dr Duncan has such parochial ideas on professional subjects. However, in the meanwhile, the question of operating here being doubtful, there never having been a successful case in Scotland, except one done by an Englishman in Aberdeen, the one Keith quoted to his brother the words of a late eminent countrywoman who lived at Cawdor:—'*We* fail? Screw your courage to the sticking place, and we'll *not* fail. *When Duncan is asleep*—when (in chloroform) their drenched natures lie as in a death—what cannot *you* and *I* perform upon?'"

But if from this time forward the names of Wells and Keith take precedence of all others in the progress of ovariotomy, let us not forget the work of their brave forerunner. Dutoit, in a tractate published at Würzburg in 1864, *Die Ovariotomie in England, Deutschland, und Frankreich*, after referring to the successes of Safford Lee, Tyler Smith, Baker Brown, and Spencer Wells, says, "Der eigentliche Heros der Ovariotomie ist aber *Charles Clay* in Manchester." On two occasions it was my good fortune to see this hero of ovariotomy. The first time was in the autumn of 1857, when at a large gathering of the profession in the house of Sir James Simpson, after Professor Faye of Stockholm had given an address on syphilisation, Dr Clay gave an address on ovariotomy, of which a report is given in the October number of the *Monthly Medical Journal*. The other time was in the autumn of last year, when the sturdy old nonagenarian, making a tour in Scotland, called upon me, and I had the satisfaction of assuring him that the successive generations of Edinburgh students were still made acquainted with his name and fame. I know you all count him worthy of your admiration, and agree with me in placing, as it were, a memorial wreath on his honoured tomb.

PROSPECT.

Gentlemen, if I have occupied your time in this Valedictory Address in dealing with men and events of the past, it is not because I think that the former times were better than these. On the contrary, I believe there never was a better time. On every hand in our department real solid progress is made, alike in the obtaining of truer scientific views of the processes with which we have to deal, and in the devising of surer methods of relieving the patients who appeal to us for aid. I am proud to think that the volumes of our own Transactions give proof that our Society has Fellows well able to advance this progress both in the scientific and practical directions. I am glad of the peace that prevails and has always prevailed within our walls, and that is born, not of apathy or listlessness, but of mutual good will and a common interest in our beneficent calling. And it gratifies me greatly that you have chosen as your next President Dr Freeland Barbour, who has already made such a brilliant record, and who is as capable as the most gifted of his predecessors of conducting the business of the Society with efficiency and dignity, and of winning for the office additional renown.

II.—ON VARIETIES OF THE APPENDIX VERMIFORMIS, CÆCUM, AND ILEO-COLIC VALVE IN MAN.

By John Struthers, M.D.

(*Continued from page* 451.)

III. The Appendix Vermiformis Morphologically considered.

In my student-days here the following was the view inculcated:—Not doubting an important function, that care had been taken to prevent the entrance of the cæcal contents and to avert the danger of the entrance of foreign bodies, by the following provisions:—(1.) Avoiding the dependent part of the cæcum as the place of origin; (2.) Placing it behind the cæcum, so as to be out of the way of injury, and to avoid the risk of causing strangulation of the intestines; (3.) Placing a valve at the orifice; (4.) Making it go off obliquely, giving a further valvular effect; (5.) Giving it an upward direction. That was the teaching of the science and the natural theology of the day; every species regarded as of independent origin, every structure regarded as designed for use in the organism within which it occurs.

Whether the appendix has or has not an important function, its point of origin and position behind the cæcum are the natural result of the forward and downward enlargement of the cæcum in the process of development. At first a diverticulum of the same width as the colon, the latter and the upper part of the diverticulum have grown wide, and the lower part has remained as the narrow appendix. It does enlarge after birth, growing in length actually though shortening relatively, and in width from that of a crow-quill to that of a goose-quill. Meckel's diverticulum grows still more in width, and is thereby less dangerous than if it had remained narrow. That diverticulum is actively functional, provided with villi that absorb, open follicles that excrete, and closed follicles that elaborate lymph, like the neighbouring small intestine from which it projects; but it cannot be said to be present from the point of view of utility to the organism within which it may exist, or to be a safe structure. A few inches more to the intestine would give the functional result without the risk. The appendix vermiformis is freely provided with follicles, open and closed, like those of the cæcum. Just half an inch more of cæcum would give the same amount of glandular surface as that of an average appendix, and without the risk.

If it be suggested that the function may be in connexion with the open follicles, the furnishing a special secretion to be added to the cæcal contents, the reply occurs that the method of supplying special secretions elsewhere in the alimentary canal is by ramified glands, such as the salivary glands, pancreas, or the glands of Brunner; a method not attended by risk. If it be suggested that there may be some reason for obtaining this hypothetically important secretion rather by a diverticulum of some kind, there is the consideration that a wider and shorter appendix would have given the desired result with much less risk. If it be suggested that there may be some reason for the narrowness of the appendix —as that the secretion may require to undergo some change before being discharged among the cæcal contents, or that the cæcal contents may not enter the appendix and cause danger, or if not causing danger receiving exclusively the benefit of the special secretion—there is the fact that some chance part of these contents do enter the appendix, appropriating the supposed benefit, with the further result that these stray contents not unfrequently become hardened there, owing to the narrowness of the tube, and produce serious or even fatal results.

If it be suggested that the function of the appendix vermiformis lies rather with the closed glands, with which it is numerously set, there is the general consideration that lymphoid follicles find lodgement in the walls of mucous passages without reference to the special function performed within the passage, and there is the local consideration that, if the cæcal contents in any way specially furnish material from which lymphoid follicles elaborate their lymph, there was room for those of the appendix in the walls of the cæcum, or at least by the addition of half an inch to the length of the cæcum. The abundance of these follicles in the walls of the appendix vermiformis may, however, play an important part in the pathological conditions to which the appendix now appears to be specially liable, and may to some extent account for these pathological conditions showing themselves during the periods of growth and activity of the system much more frequently than in old age, when lymphoid follicles in the walls of the intestinal canal become atrophied. Thus it would appear that the location of lymphoid follicles in the walls of the appendix brings with it an additional risk, in combination with that arising from the narrowness of the tube.

Although to the morphologist the discussion of suggestions of special function such as the above may seem frivolous, they are not uncalled for in view of the recent crop of such suggestions since the appendix vermiformis attained so great prominence in medicine and surgery. It is not easy for those whose studies have not extended beyond one species to realize that there are structures the presence of which cannot be accounted for by the observation merely of the organism within which they occur.

Looking for a factor irrespective of special function, we are led into the wide field of the comparative anatomy of the cæcum. That organ varies greatly in different species; in some it is of great length and capacity, evidently in the full play of important function in relation to further digestion or absorption; in some it is as short as in man, or shorter; in some it is altogether absent.[1] An appendix vermiformis strictly comparable to that of man, that is, a very narrow tube beginning abruptly from a wide cæcum, is found only in the anthropoid apes—gorilla, chimpanzee, orang, and the gibbons—in them, as far as observations have yet gone, apparently longer and tending to begin less abruptly than in man.[2]

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[1] Examples of these conditions are mentioned incidentally in Note A, below. For a comprehensive and appreciative view of the anatomy of this and other parts of the digestive organs, may be consulted Sir W. H. Flower's "Lectures on the Comparative Anatomy of the Organs of Digestion of the Mammalia," *Medical Times and Gazette*, 1872.

[2] Among mammals below these the ending of the cæcum is various; in some, of full width to the end; in some, gradually diminishing distally; in some, the tapering more marked towards the end, but without abruptness and as a continuation of the cæcum. The end of the long and capacious cæcum of the *Rabbit*, about as long as the animal and ten times the capacity of its stomach, has been compared to an appendix vermiformis. In the one before me the cæcum is 20 inches in length; the diameter diminishes gradually along the spirally sacculated part from 1½ inch to ¾ inch. The distal part that has been compared to an appendix vermiformis is 2½ inches in length, about ⅛ part of the whole, has at first a diameter of ½ inch, diminishing to ⅜ inch at the blunt end; is not sacculated, is thicker walled, and is described as closely set with lymphoid follicles. It is to be borne in mind that this so-called appendix vermiformis is not a narrow tube, in so far that it is wider than the small intestine, the diameter of which is about ¼ inch. The last ¾ inch of the ileum undergoes an ovoid dilatation to over ½ inch in diameter, the walls thickened with closely set lymphoid follicles. The distal fourth of the long tapering cæcum of the vegetable-feeding marsupial *Koala*, the cæcum of which is over three times the length of the animal, might be called an appendix vermiformis as well as that of the rabbit. In the marsupial *Wombat*, the short narrow tube alongside of the end of the ileum, and opening by the side of the ileum into the colon, has been considered as comparable to an appendix vermiformis. The comparison is not certain in view of the fact of the presence

The frequent and extreme variation the appendix vermiformis is known to present in man accords with the view that it falls to be classed among the vestigial structures occurring in the human body. It may be regarded in man and in the anthropoid apes simply as the rudimentary representative of the cæcum; the upper part we call cæcum a portion widened with the colon, in adaptation to the play of the ileo-cæcal valve and to the gathering and solidification of intestinal contents preparatory to their being forwarded along the colon. And the walls of both parts are among the numerous localities in which lymphoid follicles are distributed throughout the intestinal canal.

That a part in such a reduced condition should be so frequently the seat of serious trouble to the life of the organism, is a striking fact for consideration in its bearing on the older hypotheses employed to account for the origin and adaptations of animal structures. The difficulty presented is not lessened by the fact that these troubles, arising in the appendix vermiformis, occur mostly during the active periods of life, and with much the greatest frequency in the stronger and more active sex.

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of two cæca not only in birds but in some few of the lower mammalia, and in view of the position of the opening of this tube in the wombat in relation to the short part of the great intestine occupying the position of a cæcum.

Note A.—*Examples of various stages of development of the Ileo-colic valve, referred to above, page* 296.

The condition and adaptations of these parts in the following specimens that I have been able to examine may be shortly noted here.

BIRDS. (1.) A *Wild Swan.* No valve or fold of any kind across the intestine where the two cæca are attached. Small orifice of each cæcum points to great intestine. Cæcal valve: the ileo-cæcal part is very like the lower flap in man when the ileum is oblique, viz., a deep semilunar common septum. At opposite side of cæcal orifice there is a narrow crescentic fold. Closure of cæcal orifice could be effected only by great distention of the intestine. (2.) An *Emeu.* Where the two cæca are attached, there is a circular curtain in the intestinal canal, very like the human pyloric curtain, broadest at the side next the cæca; closure of the intestinal canal not possible unless by a sphincter muscle. Cæcal orifices guarded as follows: are hidden in a narrow gutter between the circular curtain of the intestine and a narrow crescentic fold on the side of the small intestine where the cæca enter. Behind the crescentic fold is a long common parietal ileo-cæcal septum. The arrangement is somewhat like that of the two flaps of the ileo-colic valve in man, the circular curtain like the ileo-colic flap, the crescentic fold and parietal septum like the ileo-cæcal flap; but it has reference to the orifices of the cæca, not to the preventing of reflux from the great to the small intestine; nor will it prevent reflux from the cæca to the small intestine. The circular curtain will prevent the contents of the great intestine from going back directly into the cæca, and the cæcal orifices could be closed by the approximation of the sides of the gutter against entrance from either the great or the small intestine.

MAMMALS. (1.) *Otter*, *Hedgehog*, and *Bat.* No cæcum present; no abrupt distinction externally between small and great intestine; in the bat (European), intestine of uniform calibre throughout.

(2.) *Whalebone-Whale*; a Balænoptera rostrata, 14½ feet long. Intestines a little wider than average human intestines; cæcum about twice the length.

Arrangement at ileo-colic orifice instructive. Area of junction of ileum to cæcum 6 inches in length, with correspondingly long ileo-cæcal common septum. Mouth of ileum projects as a free edge into great intestine, the projection narrow on the fourth of the circumference furthest from the cæcum, considerable on the side next the cæcum; there the projecting rim is the upper part of the common septum and is deflected, or admits of being deflected, towards the cæcum. This is as if the lower flap of the human ileo-colic valve sent its horns round the orifice instead of an upper flap. Part of this projecting iliac orifice is close to the lowest crescentic fold of the colon, but does not join it. Crescentic folds in colon numerous and of moderate breadth; two narrow crescents in cæcum seen to cross upon the ileo-cæcal septum. The arrangement here could not prevent reflux from the great to the small intestine; great distention of the cæcum could alone close the ileum. We have here an example of the simplest form of circular curtain, formed by the projection of the smaller into the greater tube, but, in the absence of fræna, not capable of resisting reflux.

(3.) *Leopard*, *Civet Cat*, and *Mangusta*. Cæcum of medium length and parallel to ileum. Representing the valve, there is only, besides the longitudinal ileo-cæcal septum, a very narrow crescentic fold on the opposite side of the iliac orifice. Scarcely any impediment to reflux into ileum. Cæcum of civet cat is contracted to narrow cone on distal $\frac{1}{4}$ inch; in mangusta, cæcum much narrowed on distal third, but gradually. (5.) *Kitten*. Ileum adherent to curved cæcum. Besides ileo-cæcal septum, very like the lower flap of the valve in man, there is, at upper side of iliac orifice, a medium-sized crescentic fold, its horns just joining those of lower flap (ileo-cæcal septum). No prolongation to form fræna. The large transversely ovoid orifice could not be closed without a sphincter muscle. Cæcum proportionately rather longer than in man, and diminishes to bluntly pointed end. No sacculation of cæcum, nor of part of colon present, in any of the carnivora mentioned in these notes.

(4.) *Dog*; a large retriever. Cæcum 8 inches long and coiled; contact with ileum short. Ileo-colic valve well seen. The fold above the orifice has now united with the horns of the short ileo-cæcal septum, so as to form a circular curtain, like the human pyloric curtain. A very narrow crescent runs across the lower part of the curtain outwards and inwards on the colon, suggesting a commencing frænum, but it is near the attached margin and not of that nature. This large transversely oval iliac orifice could not be closed without a sphincter muscle.

(5.) *Calf*; at birth. Cæcum about 6 inches in length and curved, twice the diameter of the colon, and enlarging towards its blunt end. Ileum meets great intestine abruptly, area of junction oval in direction of great intestine. Valve much as in dog; a curtain surrounding a transversely ovoid orifice. On side next cæcum, curtain is formed by upper part of the short ileo-cæcal septum. The appearance of the valve and opening is like that of the eyelids opened. No fold crosses the colon; valve restricted to iliac orifice. Closure not possible without a sphincter muscle.

(6.) *Rabbit*. The valve is in the form of a curtain, surrounding a transversely oval orifice. Curtain prolonged on the side towards the ileum, as a triangular ileo-cæcal septum, narrow at the other end of the orifice; attached edges of ileo-cæcal septum are strengthened by narrow crescentic folds, serial with the neighbouring valvules of colon and cæcum, at first suggesting incipient fræna, but they are at the attached edges of the curtain. The enlarged end of the ileum lies across the great intestine at nearly a right angle. Orifice would admit point of little finger; most of curtain narrow compared with size of orifice; closure not possible without a sphincter muscle. Here, it may be remarked, notwithstanding the enormous capacity of this long cæcum, in which the intestinal contents must undergo some important change, the ileo-colic valve is not such as to prevent reflux to the small intestine.

(7.) *Small Monkey*; species not noted, but long tailed; from Edinburgh Zoological Gardens in 1852. Ileum, colon, and cæcum about half the size of these parts in man, cæcum closely resembles usual adult human cæcum, end bluntly conical ; the three longitudinal bands approach the end, and appear to divide at their last half inch and surround the end. No trace of an appendix. Upward obliquity of ileum moderate. Ileo-colic orifice $\frac{7}{12}$ by $\frac{5}{12}$ inch, admits end of forefinger. At first glance the *ileo-colic valve* looks like a well-formed one in man, but is incomplete. Lower flap closely resembles the human, anterior horn joins upper flap, but far back on it near the wall of the colon ; but posterior horn does not run quite up, a shortcoming sometimes seen in man, as in case No. 18. Upper part of "valve" is simply a broad crescentic fold of colon, thrice as broad as the numerous valvulæ above it, projecting from the wall of the colon at nearly right angles. It extends between the postero-external and anterior longitudinal bands, across the postero-internal band, broadest ($\frac{1}{2}$ inch broad) opposite the orifice. The four tiers of valvulæ above it, on the 2 inches of colon present, extend only between neighbouring bands.

This valve would not prevent reflux into the small intestine. The lower flap would delay escape from ileum to cæcum, and, reversely, give cæcal contents an upward direction, partly impeding their reflux to the ileum. The upper flap would prevent contents of colon from falling down directly on orifice of ileum, but would equally impede passage of contents onwards from cæcum to colon, and thereby tend to send them back into the ileum. The condition presented by this specimen offers an instructive analysis of the valve in man ; the upper flap only a broader than usual crescentic fold of the colon ; the lower flap the prolonged ileo-cæcal septum, deflected a little towards the orifice ; a more complete carrying up of the lower flap, and junction with the upper at both ends of the orifice, necessary before the two can meet and prevent reflux into the ileum. The lower flap also a crescentic fold of the great intestine, but carried downwards by the downward elongation of the cæcum.

EDINBURGH, *September* 1893.

III.—THE DISORDERS OF SPEECH.

By JOHN WYLLIE, M.D., F.R.C.P. Ed., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh ; Lecturer on Medicine in the Edinburgh School.

(*Continued from page* 397.)

APHASIA IN RELATION TO ORGANIC DISEASES OF THE BRAIN—*Continued.*

VISUAL APHASIA.[1]

I NOW come to consider the effects of lesion in the centre C, in which are stored the visual memories of letters and words, written and printed.

The centre C (Fig. 7) includes the Angular Convolution, which curves over the posterior extremity of the First Temporo-Sphenoidal Fissure, and the Supra-Marginal Convolution, which curves over the posterior extremity of the Sylvian Fissure. Of the two convolutions, the Angular constitutes the more important part of the centre. Both convolutions belong to the inferior part of the Parietal Lobe, and both are supplied with blood by the Sylvian artery.

[1] I use the term Visual Aphasia in preference to Word-Blindness, because, as we shall see, destruction of the centre C causes not only Word-Blindness but also Agraphia.

It is now universally admitted that destruction of the centre C produces Word-Blindness, with consequent annihilation of the power of reading (alexia). This is its well-known effect upon the Reception and Interpretation of written and printed speech. But what is its effect upon the Production of written speech?

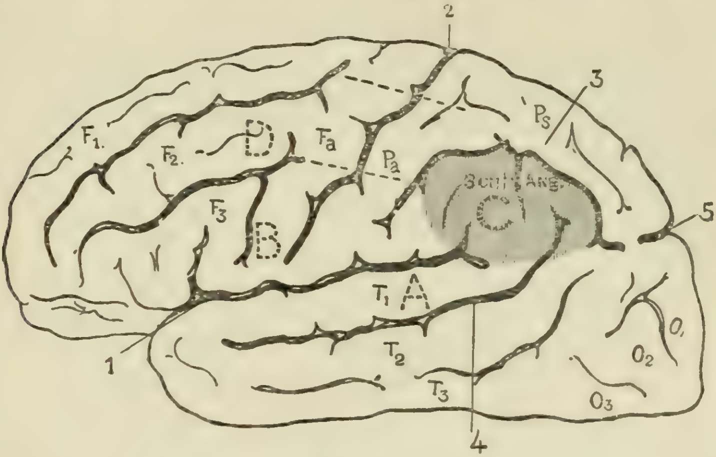

FIG. 7.

There are upon record many cases of word-blindness in which the patient, utterly unable to read—unable to read even his own hand-writing,—could yet *write* fluently and correctly. There are, however, other cases in which the word-blind patient was also agraphic, being able to write little or nothing correctly. Until recently, it was supposed that when the word-blind patient could write correctly he could do so because much previous practice in writing had imprinted the motor images of writing so securely upon the graphic-motor centre at D that these motor images sufficed for purposes of writing, though all guidance from the visual images at C had been lost, owing to destruction of this, the visual word-centre; and, on the other hand, when the word-blind patient could *not* write, it was supposed that the graphic-motor images at D had not been sufficiently well imprinted by practice to enable them to act independently.

But recent observation has thrown a new light on the subject. It has recently been shown quite conclusively that the visual images at C are, in all cases, important, not only for the reception and interpretation of written and printed speech, but also for the production of writing. It has been shown, in fact, that when the centre C is destroyed the patient can neither read nor write. As to reading, he is word-blind; as to writing, he has Amnesia Literarum, and therefore cannot call up in his mind the visual images of letters and words required for purposes of writing. It is now considered to be improbable that the graphic-motor images at D can in any single case be so strongly imprinted as to suffice for the act of writing, independently of any guidance from the visual images at C.

How, then, are the cases of pure Word-Blindness without Agraphia—in which the patient can write correctly, though he cannot read even that which he himself has written—to be accounted for? It is now believed that in these cases the visual word-centre C remains intact, and that so, also, do the pathways for the influences by which it is acted upon *from within* when words, revived in the mind, are being translated into writing; but that, on the other hand, the pathways along which, as we shall see presently, influences pass from the primary visual centres, in the two occipital lobes, to the visual word-centre C, in the angular and supra-marginal convolutions, are cut across, so that the word-images in C, though they can still be revived *from within*, can no longer be reached and revived by impressions coming to them *from without.*

Destruction of the visual word-centre C, therefore, causes both word-blindness and agraphia; but the cutting off of the visual word-centre C from the primary visual centres in the two occipital lobes causes simple word-blindness without agraphia.

The reader may remember the interesting discussion that, some years ago, was carried on by Ferrier and Munk, as to the localization of the cortical centre for vision. Ferrier originally held that it was in the Angular Convolution, and Munk that it was in the convolutions in the posterior part of the Occipital Lobe. Clinical and pathological observation is now leading up to the conclusion that both observers were partly right. The subject cannot yet be said to be fully investigated or made clear in all its relations, but everything tends to show that the occipital lobe, especially its posterior extremity, and its inner surface in the neighbourhood of the Cuneus and Calcarine Fissure (see Fig. 12), is the centre for *primary visual impressions,* and that the Angular Convolution and its neighbourhood form a centre of a higher nature, one of whose functions seems to be the *storage* of the visual images of things and of words.

It is now quite established that the primary visual centre in each occipital lobe is connected with both eyes; and that it is connected, not with the whole, but only with the half of the retina in each eye—the lateral half on the same side of the head as itself. Therefore destruction of the primary visual centre in the occipital lobe causes Homonymous Hemianopsia; that is to say, it renders the patient blind in half of his field of vision, the right or left half as the case may be; this half-blindness being termed "homonymous" because it is on the same side in relation to both eyes.

It will be remembered that, in passing backwards to form images on the retina, rays of light cross within the eyeball. When our eyes are directed straight forward, rays of light coming from an object in the right half of the field of vision cross over and form an image of the object upon the left half of the retina. If this left half of the retina be blind in both eyes, it is thus the objects to the right of the patient that are invisible to him; and, as it is the *left* half of the retina that is blind when the primary visual centre in the *left* occipital lobe is destroyed, the patient, in such a case, has *right* homonymous hemianopsia. In other words, the law is that destruction of the primary visual centre in the occipital lobe causes homonymous hemianopsia in the *opposite* half of the field of vision.

Destruction of the higher visual centre at C, causing, as already said, both word-blindness (alexia) and agraphia, does not, according to recent observations, cause hemianopsia. Concentric contraction of the field of vision in both eyes, but most marked in the eye of the opposite side, seems to be often associated with it; but even this is not proved to be a necessary consequence of it. If, however, the lesion at C penetrates deeply into the subjacent white matter, it will cut across the "Radiation of Gratiolet"—a band of white fibres passing backwards to the primary visual centre in the occipital lobe, and forming part of the pathway between the retina and that centre,—and will produce homonymous hemianopsia as effectually as a lesion of the primary visual centre itself would. In such a case, the symptoms would be word-blindness, agraphia, and homonymous hemianopsia.

The last point of importance to be noted is, that this higher centre at C is in relation not only with the primary occipital centre of its own side, but also with the primary occipital centre of the opposite hemisphere. It follows that a lesion of the primary occipital centre on the same side, causing hemianopsia, does not cut off the higher centre C from incoming impressions, and does not render the patient word-blind. In order that the higher centre be rendered word-blind though itself intact, it must be cut off from its connections with *both* occipital lobes, by a lesion which cuts across the fibres coming to it from each of them.

To sum up these rather complicated conclusions, it may be said, —(1.) That destruction of the higher visual word-centre C causes both word-blindness and agraphia. (2.) That destruction of C, causing word-blindness and agraphia, does not also cause hemianopsia if the lesion is limited to the grey matter; but that if the lesion penetrates deeply into the subjacent white matter and cuts across the Radiation of Gratiolet it does also cause hemianopsia. (3.) That a lesion in the primary visual centre in the left occipital lobe causes right homonymous hemianopsia, but does not render the patient word-blind, because the higher centre at the angular convolution is still in connexion with the primary visual centre in the right occipital lobe. (4.) That a lesion in the white matter of the occipital lobe so situated as to cut across the fibres passing forwards from both occipital lobes to the left angular convolution renders the patient word-blind but not agraphic. As such a lesion necessarily involves also the Radiation of Gratiolet, the patient has at the same time right homonymous hemianopsia.

There are thus in practice two classes of cases of word-blindness to be met with,—(1.) The cases in which the patient is at the same time agraphic; such cases being due to destruction of the centre C. (2.) The cases in which the patient, though word-blind, is not agraphic; such cases being due to a lesion in the white matter of the occipital lobe, which has severed the fibres connecting the centre C with both of the primary visual centres, in the two hemispheres.

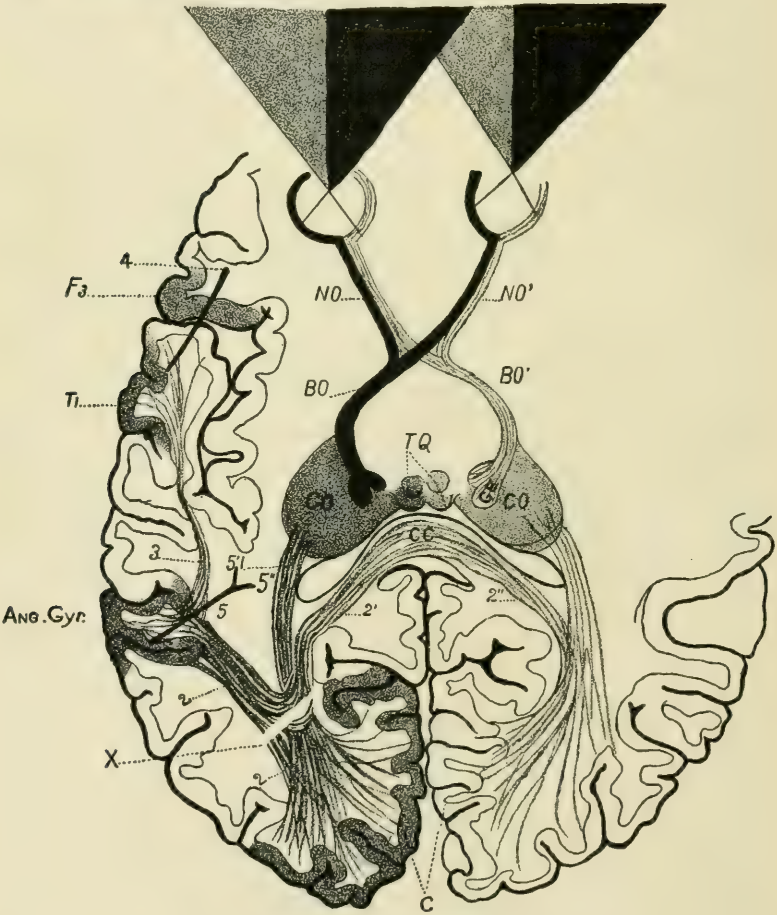

Fig. 8.—(After Dejerine.)

It is especially to the recent work of two observers, Dejerine and Sérieux, that we owe this clear distinction between these two classes of cases of word-blindness. They have put upon record a series of cases so complete and convincing that the distinction between the two classes of cases may be regarded as established. In bringing these new observations under the notice of the reader, I cannot do better than insert here the diagram employed by Dejerine to illustrate the connexion of the eyes with the primary visual centres, and, through them, with the higher visual word-centre C.

An examination of this diagram (Fig. 8) will enable the reader to understand quite easily the relation of the eyes to the primary visual centre in the occipital lobe. In the diagram, the left optic tract and its connexions are, for the sake of distinctness, given in deep black. The reader will, on looking at the diagram, at once understand how section of the left optic tract, B O, would produce homonymous hemianopsia in the opposite half of the field of vision. He will also see that the same effect would be produced by a lesion further back, either in the Optic Thalamus, in the Radiation of Gratiolet, or in the Primary Visual Centre itself. But he will note that word-blindness will not, in any of these cases, be added to the hemianopsia, unless the lesion be situated at about X, and so cut across not only the fibres which connect the angular convolution with the left occipital lobe, but also those which connect it with the right one.

Perhaps additional clearness will be arrived at from the study of the following diagram, Fig. 9, which is merely Fig. 3 repeated, with the addition of the dotted lines and circles.

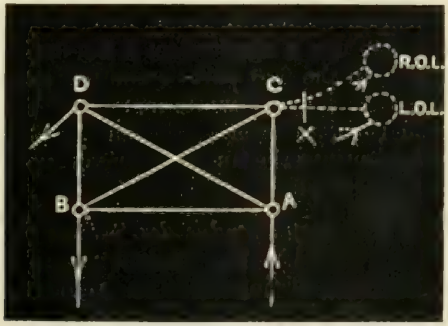

FIG. 9.

In Fig. 9, let L.O.L. and R.O.L. represent the primary visual centres in the left and right occipital lobes respectively. A lesion at X will cut across the fibres passing forward from these centres to the angular convolution C. It will cause word-blindness, but not agraphia. It will also cause homonymous hemianopsia, because, as shown in Fig. 8, such a lesion always involves the Radiation of Gratiolet. On the other hand, destruction of C would cause both word-blindness and agraphia. But it would not cause hemianopsia unless (see Fig. 8) the lesion penetrated deeply enough into the subjacent white matter to cut across the Radiation of Gratiolet.

Hemianopsia is thus a very common accompaniment of word-blindness. Whenever word-blindness is present, it should be looked for. It can easily be detected. The patient should be asked to look steadily into the physician's eye, and the physician should then make a flickering movement with the fingers of one hand at the periphery of the patient's field of vision, and bring the fingers, thus in movement, gradually inwards towards the centre of the field of vision. If there is hemianopsia, the patient will not see the moving fingers on the blind side until they have reached the middle of the field of vision, and are directly in the line between the physician's eye and his own. For the more exact demarcation of the field of vision in such cases, the Perimeter or the Campimeter should be used.

I now proceed to give examples of these two classes of cases, in which word-blindness is the symptom common to both. First, I shall take the cases in which the visual word-centre C is intact, but is cut off from impressions coming from without, by a lesion in the white matter of the occipital lobe; and, secondly, the cases in which C is itself destroyed.

Word-Blindness from such lesion in the white matter of the occipital lobe (at X, *Fig.* 8) *as cuts off the centre C from incoming influences.*

It will well repay the reader to look up for himself the excellent series of cases of this kind that have been published by Dejerine and Sérieux.[1] I can only afford to insert here a short account of one of them. The one that I shall select is in itself a very complete one. It shows, in the first part of the patient's history, the effects of a lesion situated in the white matter of the occipital lobe (at X, Fig. 8), and then, afterwards, the effects produced by the extension of that lesion into the angular convolution, and accordingly into the centre C itself.

Case I. (Dejerine, *Comptes rendus des Séances de la Socité de Biologie*, March 1892, p. 64.)—The patient was a man aged 68. After a number of attacks of tingling in the right leg and arm, he

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[1] The following is a list of some of the papers by Dejerine and Sérieux, lately published in the *Comptes Rendus de la Société de Biologie* at the dates mentioned below:—

M. J. Dejerine.—(1.) "Contribution à l'étude de l'aphasie motrice sous-corticale et de la localisation cérébrale des centres laryngés (muscles phonateurs)," 6th March 1891. (2.) "Sur un cas d'aphasie sensorielle (surdité et cécité verbales) suivi d'autopsie," 20th March 1891. (3.) "Sur un cas de cécité verbale avec agraphie, suivi d'autopsie, 27th March 1891. (4.) "Contribution à l'étude des troubles de l'écriture chez les aphasiques," July 1891. (5.) "Des différentes variétés de cécité verbale," March 1892.

P. Sérieux.—(1.) "Sur un cas d'agraphie d'origine sensorielle," 11th Dec. 1891. (2.) "Cas de cécité verbale avec agraphie," 16th Jan. 1892.

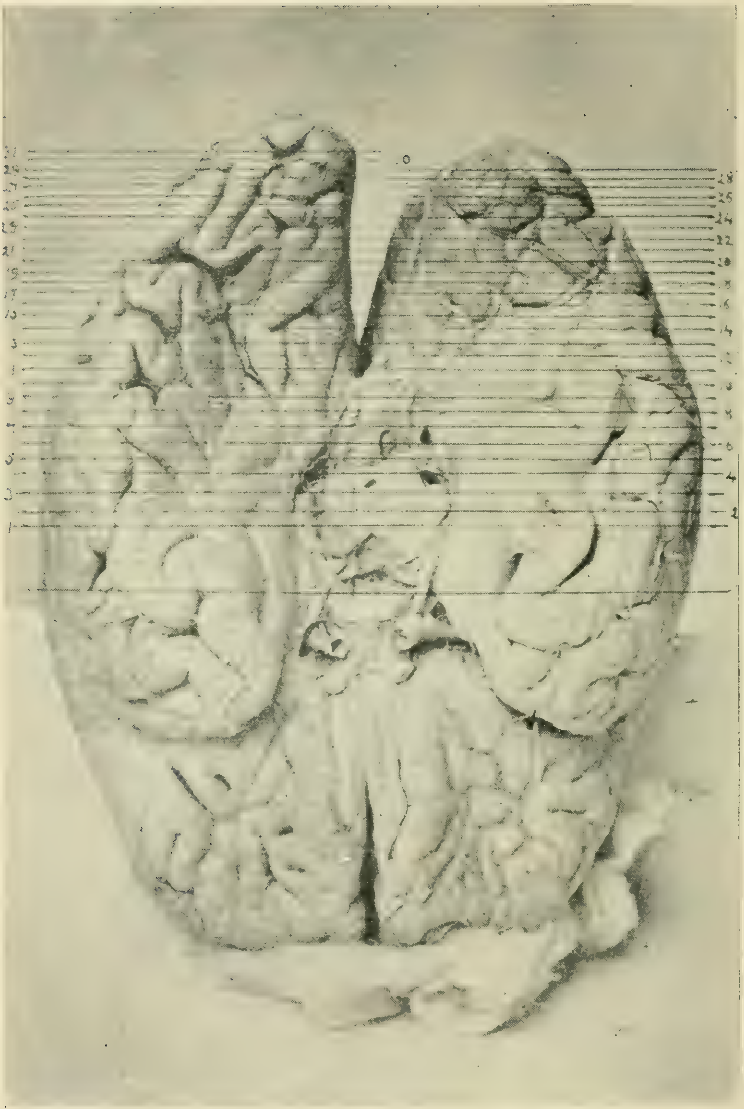

Fig. 10.—Brain of Case II., from a Photograph by Dr Middlemass.

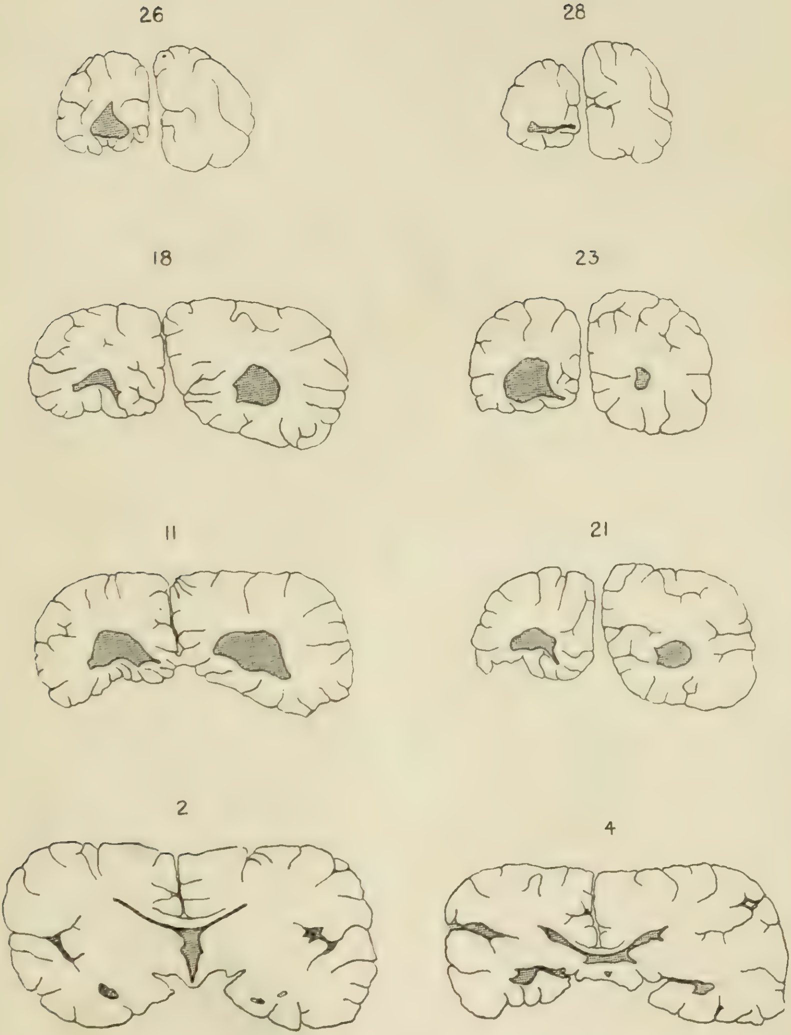

Fig. 11.—Sections of the Brain of Case II., drawn by aid of the camera lucida, showing atrophy of the left occipital lobe, and enlargement of the posterior horn of the lateral ventricle. In the Photograph (Fig. 10), the position at which each section was made is indicated by the corresponding number and line.

suddenly perceived that he could not read a single word; but he still retained the power of writing, and indeed could write with perfect ease. For four years, he remained in this condition—totally word- and even letter-blind, but able to write correctly whole pages of manuscript, though quite unable to read them after they were written. He had also lost the power of reading musical notes, though he could still sing well. He retained the power of reading figures, and could do mental calculations as well as formerly. He had right homonymous hemianopsia.

Ten days before his death, he became suddenly affected with very pronounced paraphasia, and with *total agraphia;* without, however, any paralysis of motion or loss of consciousness. There was no trace of word-deafness; and he retained his intelligence to the end. He died suddenly.

At the autopsy, there was found,—(1.), an old lesion, a softening which had destroyed the cuneus and some of the neighbouring convolutions of the occipital lobe, and had extended deeply into the white matter, so as also to cut across the fibres passing from the right occipital lobe to the angular convolution. This lesion accounted for the long-standing word-blindness without agraphia, and for the hemianopsia. (2.) A recent lesion, viz., a softening of the angular and supra-marginal convolutions, which accounted for the recent appearance of agraphia and paraphasia; the paraphasia being, no doubt, due to a disturbance of the neighbouring auditory word-centre A. The case is thus in every way a most instructive and complete one.

Among the cases of word-blindness which have come under my own observation, I have had two in which the patients were under my observation for years, and in which I had opportunities of examining the brain *post-mortem.* In both cases, there was extensive disease of the occipital lobe. Along with word-blindness, they both presented well-marked hemianopsia. As a contribution to the subject, I now proceed to make a short record of these two cases.

CASE II. (Personal observation.)—J. S., æt. 72; clerk of works; appeared as an out-patient at the Royal Infirmary on December 12th, 1889.

The patient, who was a man of fine physique, had enjoyed good health until August 1885. He then, at the age of 68, began to suffer from symptoms referable to his nervous system. These included loss of power in the right hand and the left foot, with some muscular wasting and distinct impairment of sensibility in them. He had at the same time some pain in the back of the head; and he suffered occasionally from giddiness, being apt to stagger if he turned sharply in walking. On account of these symptoms, he had been a patient in my Wards from November 11th till December 1st, 1885; but, though I have full notes of this illness, I need not here give further details. I shall only say that he recovered the power in the hand and foot. On leaving the Infirmary, however, he found himself unable to resume his former occupation as clerk of works. He felt that he had no longer sufficient mental energy for it. He therefore, after this time, maintained himself by collecting accounts for mercantile men. He found himself quite able to do this, as his powers of reading and writing and of making up accounts were as yet apparently unimpaired.

On the 12th of December 1889, he called at the Infirmary to inform me that about six weeks previously he had had a severe seizure. About midday, when he was walking in the street, he had suddenly felt giddy and inclined to fall, everything appearing to swim before his eyes; but, after supporting himself upon a railing for half an hour, he had begun to feel better, and, though still light in the head, had been able, slowly and with difficulty, to walk home. Ten days after this seizure, he began to feel the whole right side of the body cold and heavy; the difference of sensation in the two sides being so marked that, to use his own expression, he felt as if a plumb line down the middle of the head and trunk had divided him into two halves. The tactile sensation in the right side seemed to himself to be blunted; but objective examination at the Infirmary, some weeks afterwards, did not confirm this impression. It was at this time, ten days after the seizure, *that he discovered that he was word-blind.* He could not read even his own name. At first, he was even letter-blind; but, before coming to the Infirmary on the 12th of December, he had recovered sufficiently to be able to recognise the *letters* individually, though he could read no single word without first spelling it.

Examination of the eyes at this time showed typical right Homonymous Hemianopsia, with marked contraction of the remaining left halves of the fields of vision. The contraction was so marked that the patient saw things as if looking at them through a tube. Though word-blind, the patient was not agraphic. He continued, indeed, to write a remarkably good business hand; and he made very few mistakes in spelling, such as he did make being evidently due, not to his cerebral condition, but to defective education. Although he expressed himself in writing with ease and fluency, he could read the writing only word by word, after spelling each word letter by letter.

As to spoken speech, the patient expressed himself with great liveliness and volubility, being never at a loss for a word, except in the case of proper names, which he was apt to forget. There was no forgetfulness of the names of things, and no paraphasia. His intelligence seemed very good; but he complained of a sense of confusion in his head, "as if a cloud were over his mind;" and this feeling, together with his word-blindness, had made him quite unable to continue his occupation of collecting accounts.

After the date of this examination (December 12th, 1889) the patient continued to reside at his lodgings for some months, calling occasionally to report himself at the Infirmary. He then became affected with gangrene of the great toe; and, as this deprived him of sleep, he became delirious at night, and so unmanageable that it was necessary for his friends to have him removed to the hospital of St Cuthbert's Workhouse. He was afterwards transferred to the City Workhouse; and there, eventually, he died of hepatic disease with jaundice, on the 23rd of January 1893.

A post-mortem examination was made by me two days after the patient's death, and the brain was committed for examination to Dr Middlemass, Pathologist to the Royal Edinburgh Asylum, whose report I now append.

Pathological Report by Dr Middlemass.—"An examination of the brain showed that there was no gross lesion except on the under surface. When it was turned over, and the cerebellum removed, there was seen to be a considerable amount of atrophy of the convolutions on the under surface of the occipital lobe on the left side. There was some falling in of the convolutions in the centre, and on palpation there was slight fluctuation to be felt, as if the posterior horn of the ventricle were dilated. The arrangement of the convolutions was quite different from that usually described and from that of the other side. They were smaller and appeared to be more numerous, and there was a considerable amount of atrophy. Whether the arrangement of the convolutions was due to the atrophy or not, it was impossible to say absolutely.

"The brain was hardened as a whole, and subsequently transverse sections were made to ascertain the exact nature and extent of the atrophy. As a result of these, it was found that there was a softening of the white matter in the floor of the posterior horn of the left lateral ventricle, due probably to the blocking of one of the branches of the posterior cerebral artery. This softening was not of the usual kind in which both white and grey matter alike suffer, but, as sometimes happens, especially in softenings involving the walls of the ventricles, it affected the white matter only. This had degenerated and become gradually absorbed, and as a consequence the horn of the ventricle had become dilated to compensate for the loss of solid material. The grey matter of the convolutions had been left, though in a somewhat atrophied condition, and their form was reproduced in the floor of the ventricle, but exactly the reverse of their appearance on the external surface. A microscopic examination of these convolutions in the fresh condition it was not possible to make, as it was desired to harden the brain as a whole. But an examination of similar conditions in other cases makes it certain, that, though the convolutions preserved their form in a general way, they were functionally inactive, their central connexions being cut off, and the nerve elements degenerated. An investigation of the sections of the brain showed that the atrophy extended from the tip of the under surface of the occipital lobe, where the dilated posterior horn reached to within an eighth of an inch of the surface, as far forwards as the middle of the crura cerebri. That is to say, the convolutions affected were those designated median and lateral occipito-temporal (Ecker) or lingual and fusiform lobules, together with the posterior half of the gyrus hippocampi. There was no affection of either Broca's convolution or the angular gyrus."

Dr Middlemass photographed the brain, and made a large number of transverse sections of the occipital lobe. Of each section he made an exact drawing by aid of the camera lucida. I am sorry I cannot publish copies of all of these drawings, but I have made a selection of eight of them (see Fig. 11). In each case the exact position at which the section was made is indicated by its number and the corresponding number and line on the photograph which I also reproduce (Fig. 10). From these sections, the reader will observe how much the posterior horn of the left lateral ventricle was enlarged, and how markedly the white matter around it, and especially that beneath its floor, was atrophied. In the photograph, the atrophied condition of the convolutions at the tip and along the inferior surface of the occipital lobe is fairly well exhibited; but I may say that in the photograph this appearance is not so striking as it was in the actual brain.

There can be little doubt that in this case the extensive disease of the white matter of the left occipital lobe had involved the fibres connecting the angular convolution with both occipital lobes, thus causing the word-blindness. The lesion also involved both the Radiation of Gratiolet and the primary centre for vision in the cortex of the left occipital lobe, thus causing the hemianopsia.

CASE III. (Personal Observation.)—A much-respected professional man, aged 70. Had been engaged in active work in South Africa till thirteen years before the beginning of his illness, when he had retired and settled in Edinburgh. During these last thirteen years, he had continued to enjoy his usual excellent health, except that on ten or twelve occasions he had experienced attacks of giddiness, sufficiently marked to make him stagger, and cause him to support himself with his stick for a moment. It was observed also that, for three or four years before the beginning of his illness, he had, in his walk and carriage, been showing evidence of advancing age.

On Saturday, the 22nd of September 1888, the patient had fatigued himself a good deal with walking; but in the evening he seemed in his usual health. Next morning he awoke with a dull headache; and, feeling ill, he remained in bed nearly all day. On the third day, he seemed a good deal better, and went out for a short time, but still felt unwell. On the fourth day, he was decidedly worse, and kept his bed. It was now observed that when he was taking his food he did not direct the movements of his right hand properly. The expression of his face also showed his friends that he was seriously ill. I was therefore sent for, and saw the patient in the afternoon. I found him suffering from slight motor hemiplegia with considerable anæsthesia on the right side, and with well-marked and typical right homonymous hemianopsia. At this time, and for several weeks afterwards, the patient was much confused in his mind, especially during the night, having delusions about being away from home, etc., and being much troubled with nightmare in his sleep. But he gradually improved, and by about the end of November was able to sit up a little daily.

On the 4th of December, and during succeeding days, I made a pretty full note of his condition, doing it little by little, so as to avoid fatiguing him.

I found that the motor weakness on the right side had diminished notably, the outer circle of the dynamometer showing with the right hand a grasp of 70, as compared with 90 registered by the grasp of the left hand. The weakness in the right leg had also diminished, so that the patient, when out of bed, was able, though lame, to walk a few steps without assistance. The anæsthesia of the right side had almost completely disappeared. In the arm, however, there was still marked impairment of the muscular sense; so that when his eyes were closed he had great difficulty in guiding the movements of the affected right arm, when he was asked to touch, with the right hand, the left hand or the nose. The right homonymous hemianopsia continued to be as complete and typical as before.

Written Speech.—There was total Word-Blindness. The patient was not only word-blind, but also letter-blind. When the name Dugald was placed before him in large print, he could not make it out, but, as is curiously the rule in such cases, did not hesitate to name each of the letters, though mistaken in every case. This is what he made of Dugald :

D u g a l d
K a n i o i

He was equally at fault with numerals, naming them as letters thus—

1 2 3 4 5 6
i r e i u e

In like manner he translated the following algebraic symbols thus—

+ × ÷
n e a

He could, however, interpret the meaning of pictures or drawings quite easily. I made him a sketch of a man's face, and asked him what it was. He could not recall the word "face," but said that it was "a most determined Highlander;" and the face had a determined expression.

Unfortunately I did not test his power of *writing* sufficiently, as I was afraid of exhausting him. But I got him to write, with his somewhat weak right hand, his own Christian name. He did so in large and tremulous characters that are barely legible.

Spoken Speech.—There was no marked degree of word-deafness; but there was a slight degree of it, which was shown when the patient was tested with the names of concrete things. Thus, when I asked him to touch, as I named each part, his *nose, eyebrows, beard,* etc., he often made mistakes in what he touched. There was marked Amnesia of the names of persons and of concrete things. Thus the patient often failed to recall the names of his nearest relations, and could not name articles of furniture that were pointed out to him. In conversation, he was often arrested by this forgetfulness of nouns. Here is a little bit of my conversation with him. "How did you sleep last night?" "I got a sleeping thing late in the morning. It is making me heavier and useless. It looked very much to me last night as if there was a little modifying of the — Oh! I don't know how I can't name these things." "Have you any pain in your head now?" "No; there is a stupidness, and not so clear. Last night, was very stupid and dull." "Tell me what you feel as regards your speech." "It would be impossible for me to bring up the names of those articles that are used for acting upon speech. Could not name one of them. It is getting worse and worse."

Apart from the amnesia of nouns, there was no hesitancy in the patient's utterance; there was no stammering; and only now and again was there a slight thickness of speech (slurring) in pronouncing a word or syllable. With his total Word-Blindness and consequent inability to read any printed or written word, it was interesting to contrast the readiness with which he recognised words when they were spelt aloud to him. Shown the printed word *cat*, he made a mistake with every letter in spelling it; but when the letters were spelt aloud to him, and he was asked what it was, he said, "cat, of course," with the greatest readiness.

In this condition the patient remained for about four years, totally word-blind,[1] and never attempting either to read or to write; and presenting some amnesia of nouns, in his conversation. With the exception of two periods of some weeks' duration, during which his mind was a good deal disturbed by delusions, he was perfectly rational; though intellectually he was no longer the man he had been before his illness. He lived quietly at home, and was able to sit up most of the day, and to go out for a drive in good weather. In the evenings, he was in the habit of hearing his sons say their Latin lessons over to him; and he could always correct them if they made a mistake. Throughout his illness, he was carefully attended by my friend Dr R. A. Lundie. He died of a pneumonic attack, on the 15th of October 1892, æt. 74.

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[1] His son tells me that the patient, on one occasion, two years after the beginning of his illness, made out a name upon a tombstone, though he was wrong in spelling the other letters of the inscription.

The autopsy was conducted by Dr Leith, Pathologist to the Royal Infirmary, Dr Lundie and I being also present. On examination of the brain, it was found that the convolutions forming the speech centres A B C and D were normal in appearance, the angular convolution C being normal, like the others. The chief morbid appearances were found on the under surface of the occipital lobe. In his careful report, Dr Leith notes that they were exhibited chiefly in the Inferior Temporo-Occipital Convolution (4th Temporal), the Hippocampal Convolution, and the Collateral Fissure, and also in the Lingual Convolution, the anterior part of the Cuneus, and the Calcarine Fissure. In these parts, there was thinning of the cortex from atrophy. On section, Dr Leith found that beneath the atrophied cortex there was still greater atrophy of the white matter, this being so marked that at the region of greatest atrophy the remnant of the cortex came into direct connexion with the ependyma of the ventricular horn. At this region of greatest atrophy (the under surface of the occipital lobe, about the middle of the Inferior Temporo-Occipital or 4th Temporal Convolution), there was a marked depression on the surface of the brain about 2½ inches in length, and from ⅞ of an inch to an inch in breadth. This depression marked the situation of a kind of cyst-like cavity where the grey matter and the subjacent white matter had been almost entirely destroyed, so that the walls of the cavity were chiefly formed of pia mater on the one side and the ependyma of the ventricle on the other. The Collateral Fissure was much widened, and its floor was formed, owing to the disappearance of the grey and white matters, by the ependyma of the ventricle. From a sketch made at the autopsy, and from Dr Leith's description, I have indicated in the following diagram (Fig. 12) the area in which the atrophy of the cortex was most apparent. The area of deepest shading in the Inferior Temporo-Occipital Convolution indicates the situation of the marked depression where there was a cyst-like cavity beneath the pia mater.

Dr Leith could not detect any hæmatoidin crystals in the walls of the cavity, and he was inclined to think that the cause of the atrophy was not apoplexy but thrombosis of the bloodvessels. He was not, however, able to find any actual thrombus in a bloodvessel, the only morbid appearance observable in the bloodvessels of the brain being a slight thickening of their coats.

Here, then, is a second case of hemianopsia and word-blindness in which, as in the last, the lesion involved both the grey and the white matter of the occipital lobe; the region in which the atrophy was best marked being, as in the other case, the under surface of the occipital and temporal lobes.

In this last case, the lesion, though it did not involve the first temporal convolution, the centre for auditory word-images, had evidently, by its proximity, disturbed the action of that centre sufficiently to produce the considerable degree of Amnesia Verbalis that was exhibited in the patient's speech, especially during the first months of his illness. The writing, unfortunately, was not sufficiently tested to enable me to say whether the visual word-images at the centre C were also disturbed in like manner; but, as the centre C appeared to be intact, we may reasonably suppose that the word-blindness was due to the cutting off of the centre C from incoming impressions, by the disease in the white matter. The slight motor hemiplegia was no doubt due to the disturbance of the motor centres caused by the proximity of the serious disease in the occipital and temporal lobes of the same hemisphere.

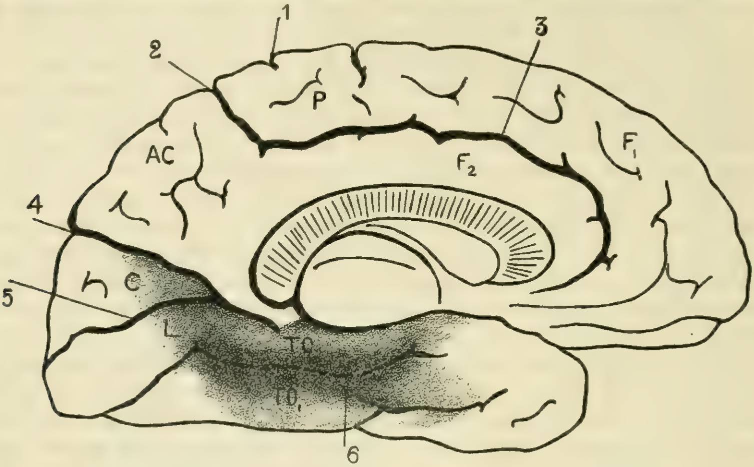

FIG. 12.—The shading shows the region of atrophy of the cortex and subjacent white matter. C, the Cuneus; L, the Lingual Convolution; TO_1, the Inferior Temporo-Occipital Convolution; TO_2, the Hippocampal Convolution; 5, the Calcarine Fissure; 6, the Collateral Fissure.

Word-Blindness with Agraphia, produced by Destruction of the Centre C.

In contrast with the three cases which I have already given, I shall now cite a case of word-blindness in which the lesion was situated, not in the occipital lobe, but in the angular convolution, and accordingly in the centre C itself. Several excellent cases of this kind have been put on record by Dejerine and Sérieux. I shall select a very typical one recorded by Sérieux; and I ask the reader to note (1) that in this case the word-blindness was associated with agraphia, and (2) that it was not associated with hemianopsia, because the lesion did not penetrate deeply enough into the subjacent white matter to cut across the Radiation of Gratiolet.

CASE IV. (*Reported by* Sérieux *to the Soc. de Biologie*, 16th Jan. 1892. See *Comptes Rendus.*)—A female, aged 63, admitted into the asylum of Villejuif on the 29th of Sept. 1891. Was intelligent, but had lost the power of reading and writing. Being anxious to regain the power of reading and writing, she practised much with her pen; but her efforts resulted only in such confused collections of letters as the following—these being, moreover, written badly—in a tremulous hand—"*an um aa monon mono muosi.*" The intelligence was normal, and there were no paralytic symptoms whatever. Vision was intact, and it is expressly stated that there was no hemianopsia. It was as impossible for the patient to read as to write. She could, however, recognise a few of the individual letters [overflow of education into the other hemisphere?]; and when a word was composed of these she could sometimes spell it out and pronounce it.

Two months after her admission, she had an attack of apoplexy, with hæmorrhage into the ventricles, and died. At the autopsy, besides the recent extravasation of blood, there was found in the brain the old lesion which had produced the word-blindness and agraphia. This was a softening exactly circumscribed in the area now recognised as that for visual word-images, viz., the angular and supra-marginal convolutions.

Nothing could be more convincing than this case. It and the other cases of the same kind already on record prove conclusively that not only word-blindness (alexia), but also agraphia, is produced by a destructive lesion in the visual word-centre. And be it remarked that in such cases the patient cannot write with his left hand any more than he can with his right.

The case contrasts with Cases I. and II., in which with lesion in the occipital lobe, and with word-blindness and hemianopsia, the patient was not agraphic, because the visual word-centre, though cut off from the primary word-centres, and therefore word-blind, was still intact, and could, for purposes of writing, have its images revived from within. I hope I have said enough to make perfectly clear the distinction between these two varieties of word-blindness,—the one with, and the other without associated agraphia.

How some word-blind patients may be enabled to read.

It is a well-known fact that some word-blind patients, quite unable to read either words or letters on merely looking at them, can yet spell out words shown to them, if they make with the finger a tracing in the air of each individual letter. Charcot, Westphal, and others, have recorded many cases of this kind. By making such a tracing, these patients no doubt revive the graphic-motor images of the letters that are stored in the centre D. But if the centre C, with its visual images of the letters, is destroyed, it is doubtful if the revival of the graphic-motor images at D can, of itself, suffice to bring about this mental recognition of the letters. It seems, on the whole, to be probable that the word-blind patients who are able to spell out words on thus making tracings of the letters belong to the category of those whose word-blindness is due, not to the destruction of the centre C, but to the cutting off of that centre from its connexions with the primary visual centres in the occipital lobes. In such patients, the revival of the graphic-motor images at D no doubt excites a revival of the corresponding visual images at C, and thus the mental recognition of the letters is rendered easy. The clear distinction between the two classes of word-blind patients has been made so recently that it is as yet impossible to say if in any case belonging to the class in which word-blindness is due to destruction of the centre C it is possible for the patient to spell out letters on tracing them in the air. It seems very probable, however, that all the patients who can thus spell out letters belong to the other class, whose word-blindness is due to the cutting off of the visual word-centre C from its connexions with the primary visual centres in the occipital lobes.

Mind Blindness (Psychical Blindness) sometimes associated with Word-Blindness.

In a few rare cases of word-blindness, experience has shown that the patient not only fails to recognise words when he sees them, but also fails to recognise familiar objects. He may, for example, mistake a basin for a chamber-pot, or a handkerchief for a towel; and on seeing an intimate friend he may fail to recognise him until he hears him speak. This condition is known as mind-blindness (*Seelenblindheit*, *cécité psychique*). Essentially, it is probably of the same nature as word-blindness. It seems, like word-blindness, to be due to the obliteration of images that have been stored in the higher visual centre. As the imprintation and storage of the images of *things* does not require such close attention as the imprintation and storage of *words*, the images of things are probably stored efficiently in both hemispheres of the brain. There is probably, however, in different brains, some variation in this respect; since a few cases of unilateral lesion have been recorded in which a certain degree of mind-blindness (would not it be better to call it object-blindness?) seems to have been present. We know, as yet, but little of the subject, and I shall therefore not enter into any detail about it; but I should like to make a short note of a very remarkable case of mind-blindness (object-blindness), associated with word-blindness, that has recently been put on record by Sérieux.

CASE V. (*Reported by* Sérieux, *Comptes Rendus, Soc. de Biologie*, Dec. 1891, p. 195.)—A female, aged 62. Had a stroke in 1888, followed by temporary paralysis, and lasting troubles of vision. Had another attack in June 1890, with epileptiform convulsions, hallucinations of hearing, delirium, etc. When examined on the morning of the 16th of Dec. 1890, was found to be suffering from word-blindness and agraphia, and also from word-deafness and paraphasia. The intelligence was intact, except that there was marked mind-blindness (object-blindness). This was exhibited in the inability of the patient to recognise her nearest relations when they called upon her. She said the people about her seemed to be wearing masks, and that the nose was changed, etc. The figure of her daughter appeared to her to be "flat as a skate." This object-blindness, best marked in relation to faces, was also exhibited, in a less degree, in relation to other objects. She could recognise some of these, such as her fingers, a penholder, etc.; but she failed to recognise others,—apparently, for example, mistaking a comb for a penholder, and wiping it as such. After a period of some months, during which there was amelioration in all her symptoms, she died of a pneumonia. At the autopsy, a lesion was found in the cortex of each hemisphere. On the left side, there was a softening in the supra-marginal convolution, and also a limited patch of softening in the posterior extremity of the first temporal. On the right side, there was a large patch of softening involving the angular and supra-marginal convolutions, and also the posterior extremities of the first and second temporal convolutions.

This case is of great interest in relation to mind-blindness. It suggests that the visual images of objects are, as I have said they probably are, efficiently imprinted on the higher visual centres of both hemispheres, whereas, owing probably to the greater effort of attention required, the images of words are efficiently imprinted in the higher visual centre of only one of the hemispheres. But the subject has not yet been fully studied.

Visual Hallucinations apt to be associated with Hemianopsia when the Lesion is in the Cortex of the Occipital Lobe.

In concluding this paper, I should like to say a word about an interesting phenomenon that has recently been found to be frequently associated with homonymous hemianopsia when that symptom is of cortical origin. Professor Henschen of Upsala, in his great work on *The Pathology of the Brain*,[1] directs attention to the fact that in cases of cortical origin of the symptom well-marked visual hallucinations (figures of men, etc.) may trouble the patient in the blind half of the field of vision. He gives in detail a number of cases in which these hallucinations were present. This is a good illustration of the law so strongly insisted upon by Bastian, and so frequently exemplified in practice, that lesions in the posterior parts of the brain are more apt to produce hallucinations and delusions than lesions in the middle or anterior parts.

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[1] *Klin. und Anat. Beiträge zur Path. des Gehirns*, 1892.

(*To be continued.*)

IV.—THE RELATIONSHIP OF PHYSIOLOGY TO MEDICINE: An Introductory Lecture delivered on October 12th, 1893.

By D. Noël Paton, M.D., F.R.C.P.E., Lecturer on Institutes of Medicine, Edinburgh School of Medicine, Surgeons' Hall.

Why are you going to study Physiology? You answer, perhaps, "Because it is one of the prescribed courses of the medical curriculum, and one of the subjects of the Second Professional Examination;" and are thoroughly satisfied with your reply. But you should not be satisfied with such an answer, and your curiosity should prompt you further to inquire *why* Physiology should be included in the curriculum, and *why* it should form part of the Second Professional Examination. This is not simply due to the arbitrary decrees of licensing bodies and examining boards, as some students seem to think. The General Medical Council, in whose hands are all regulations as to modes of study and examination, have ordained that Physiology shall have this position in the curriculum. Why have they done so?

It is easy to understand why Anatomy should occupy so much of the student's time. A knowledge of the structure of the various parts of the body must be possessed before their mode of action can be considered; and without a knowledge of the structure of the body, the surgeon's powers would be limited indeed, and every operation would be a mere groping in the dark. Everyone knows what Anatomy is, and everyone has a general idea of the work of the surgeon. Hence everyone understands why a knowledge of Anatomy is so essential; and students are not reluctant to devote a large part of their time to the mastery of this science, and the knowledge they obtain of it is fairly thorough and complete. While Anatomy is the Institutes of Surgery, Physiology has been well called the Institutes of Medicine. But, while the general familiarity with the nature of anatomy and surgery enables everyone to see their intimate connexion, the general ignorance of the methods of medical practice and of the nature of physiological science prevents the student from at once understanding their relationship to one another. This is the more to be regretted, as at least nine-tenths of your practice will probably be medical, and only the remaining one-tenth surgical. The popular idea of Physiology is the cutting up living animals for the amusement, and, perhaps, instruction of the physiologist; while medical practice is commonly regarded as a mysterious system of drugging patients more or less successfully, according to the degree of possession of an undefined quality, commonly called "skill." The connexion between the two is thus not at once manifest. But to enable you to determine how far your study of Physiology will have any important bearing on your practice of medicine, you must have a clear idea of the objects and methods of medical practice, and of the nature and extent of Physiology.

This morning I desire briefly to indicate to you the bearing of Physiology on Medical Practice, and to attempt to show you how you can make your study of Physiology of use to you in your life's work as doctors.

As everyone knows, the main object of the Practice of Medicine is to cure. But to do this you must first find out what is the matter with your patient; and hence the first great aim and object of the physician is to make out exactly—to diagnose—the condition of his patient.

The duty of a physician may be stated as,—1*st*, To find out what is wrong. 2*nd*, To find out why the condition is wrong. 3*rd*, To put the abnormal condition right.

To perform his duty he must,—1*st*, be able to find out whether the different parts of his patient are acting normally or not; 2*nd*, be able to investigate the conditions disturbing the action of any part.

Let us suppose a patient presents himself complaining of weariness and lassitude. All he can tell you is that he is unable for work, and is made tired by the slightest exertion. Such a condition might be induced by a hundred different causes,—disturbances of almost any of the organs of the body would produce it. To cure him you must find which of his organs are acting imperfectly or improperly: and to do this you must be able to investigate the condition of each. His blood may be impoverished. To find if this is the case you must know the way to examine it. His heart may be diseased: you must know how to find if it is acting properly or not. His stomach or liver may be deranged: you must be able to ascertain if these are not performing their functions perfectly. His kidneys may be affected: you must know how to investigate the condition of these organs.

Having examined the various organs, to be able to say that they are abnormal you must have a precise knowledge of what is their normal action.

Suppose that you find that the corpuscles of the blood number 2,000,000 per c.mm. Unless you know that from 4,000,000 to 5,000,000 is the normal number, you would be unable to say that the number of corpuscles is diminished. It next becomes your duty to find out what is causing this diminution. Are the corpuscles being formed in too small numbers, or are they being destroyed to too great an extent? To find out, you must be familiar not only with the methods of ascertaining the state of the formation and destruction of the corpuscles, but you must know what are the various conditions which can so prevent the formation or increase the destruction of these bodies. Suppose you ascertain that your patient's blood-corpuscles are undergoing a too rapid destruction; you have next to face the question, What is causing this? Knowing the different conditions which produce the effect, you investigate each in turn, and you may finally find that in his intestines certain changes are going on, the removal of which will prevent the excessive destruction of blood, and will restore the patient to health.

The knowledge that a physician must have, in order to make a correct diagnosis before attempting the cure of the patient, may be tabulated thus:—1. He must know how to investigate the condition of the various organs. 2. He must know what is the normal condition of each organ. 3. He must be able to investigate the conditions disturbing the action of each organ. 4. He must know the various conditions which influence the action of the organs.

Having thus stated the great object of the Practice of Medicine, and having set forth the training and knowledge required for it, let us next consider the question of, What is Physiology? The word simply means the Science of Nature, and at one time it included all the natural sciences. Very early, however, the term Physiology became restricted to the study of *living* creatures.

But as our knowledge of these extended, and the field of research became larger, workers devoted themselves, some to one aspect of the subject, some to another: one set dealing mainly with the *structure* of animals and plants, another set devoting themselves to the investigation of the *mode of action* of the various parts of the living creatures. The former aspect of the science is called Morphology; the latter, Physiology.

Physiology may now be defined as the science relating to the mode of action of plants and animals and their various parts during life. Even in its thus restricted form, Physiology is a science of such magnitude that no single man can hope to master its whole extent. And hence we find some mainly engaged on the study of the life of plants—Plant Physiologists; and others labouring on questions of animal life—Animal Physiologists. It is with Animal Physiology that we have to do, and chiefly with the *Physiology of Man*. What, then, does this Physiology of Man attempt to teach?

1*st*, It teaches how to observe and investigate the mode of action of the different parts of the body. 2*nd*, It summarizes the results of these investigations, and teaches what is the normal mode of action of the various parts. 3*rd*, It teaches how to study and investigate the various conditions modifying the activity of the various parts. 4*th*, It teaches what these conditions are, and how they act.

Now, do you see why Physiology is called the Institutes of Medicine? It is Physiology which gives you the training and knowledge essential for the successful practice of your profession.

You have, I daresay, frequently heard it said, that while Surgery has advanced with enormous strides, Medicine is standing still, and is little better than an empirical art, and hardly worthy of the name of a science. And this is too true. Surgery has advanced, because the science upon which it is built—Anatomy—has occupied so prominent a part in medical education. Medicine has stood still, largely because *its* fundamental science—Physiology—has not received the attention it deserves, and because medical graduates are turned out to practise their profession without that training in the Institutes of Medicine which alone can save them from a wretched empiricism.

To illustrate how ignorance and imperfect training in Physiology must prejudicially influence your success as physicians, let me analyse more in detail the effects of ignorance of each of these divisions into which we have divided the subject.

One of the most common causes of failure is undoubtedly *ignorance of the methods of observing and examining the action of different parts of the body.* When clinical tutor, nothing used to strike me more than the way in which a student, after examining a patient for many minutes, would show by his remarks that he had failed to observe the most obvious facts. Many a man makes a faulty diagnosis simply from such inability to use the sense of sight. But when special methods of investigation have to be applied, it is then that the untrained medical man most frequently fails. Often he has a book-knowledge of the method he wishes to employ, but his practical knowledge is imperfect. At the bedside of a patient book-knowledge is of little value. It is familiarity with the method given by actual practice that is alone of use.

You suspect something wrong with the blood. But you are not practically familiar with the method of examining this fluid, and thus you are unable to make certain that it really is the blood that is at fault. Or you think there is something wrong with your patient's digestion. You do not know how to examine the process of digestion, and you cannot say definitely that this is deranged.

Hundreds of instances of failure from inability to use the methods of investigating the functions of the organs might be given. It is one of the common causes of failure in diagnosis; and no wonder, for few students take the trouble to train themselves in this most necessary accomplishment.

Failure in diagnosis from *ignorance of what is the normal condition* is rarer, because it is easier to acquire a knowledge upon this from books and lectures, but still common. I have been called out by a student to see an infant, and found that the cause of his anxiety was the fact that the pulse was 120! He did not know that this is the normal condition in the infant. I have seen a man count a patient's respirations, and not be able to say if the rate was normal. But the worst failures from this cause occur from the knowledge possessed being merely theoretical,—derived from books and lectures, and not from practical experience. The sight of a student giving an accurate account of the characters of the pulse, and being unable to tell, when he put his finger on the patient's wrist, whether a pulse existed at all, is an amusing but unedifying example of the dangers of ignorance on this point.

Ignorance of the methods of investigating the conditions disturbing a part is one of the commonest causes of failure, since such investigations are the most difficult parts of diagnosis.

You find, for instance, that your patient's heart is beating too rapidly. You must ascertain the condition producing this; and many a doctor, from ignorance of the method of investigating what these conditions are, is forced to treat the case empirically, and to drug his patient with the whole pharmacopœia, in the hope of hitting on something which will combat the disturbance.

Ignorance of the various conditions acting on the function of different organs is also a fertile cause of imperfect diagnosis. A doctor who does not know the many different factors which modify the rate of the heart, will be apt to pass unnoticed the condition producing a disturbance in any particular instance.

I trust I have succeeded in enforcing upon you that ignorance of Physiology must lead at every turn to failure in diagnosis, and therefore to unsuccessful treatment. To have any feeling of certainty of success in practice, to make your practice anything better than the wretched empiricism of the present day, to assist in advancing Medicine to the rank of a science, you must have a thorough knowledge of Physiology—the Institutes of Medicine.

How are you, during the coming session, to gain this knowledge and to acquire the necessary training? Much depends on your teacher, but still more depends on yourselves. In teaching Physiology to medical students, the teacher must ever bear in mind that the main object of the study is to prepare for the future study of Medicine. The field of modern Physiology is very wide, and contains much of the deepest interest, but with no immediate important bearing on Medicine, into which the lecturer is often tempted to make excursions. Sometimes such an excursion is pleasant and of benefit, but we must not rank what we cull during our wanderings as of equal value with the solid harvest we have to reap and garner.

It will therefore be my endeavour during the winter to direct your studies to those parts of Physiology which have the most direct and important bearing on Medicine; and if I succeed in so doing, I shall owe it largely to the experience gained during six years of practice, and to insight into the wants of medical students acquired during my tenure of the tutorship of Clinical Medicine in the Infirmary. I intend, in fact, to teach you Institutes of Medicine. But on your part you must never forget why you are studying Physiology, and must aim at acquiring that sound and practical knowledge which alone can benefit you. Never forget the four points in which you have to train yourselves, and at each step ask yourselves—"Do I know this well enough to apply it in practice?"

How, then, must you study, and I teach, Physiology? In former times every medical science was taught by a course or courses of lectures; and, when the various sciences were based more upon the theories and dicta of some great authority than upon actual observation, this method was sufficient. In these old days the opportunities of studying even Anatomy by personal observation were scanty indeed. Physiology was simply a mass of theories, largely based upon spiritualistic superstition, and having little or no bearing on the crude, irrational, and empiric systems of medical treatment. But as the knowledge of Anatomy became more extended, and as the various organs were studied more in detail, a mass of information as to their mode of action was accumulated, and the true science of Physiology was instituted. Gradually, as this science extended, its bearing on Medicine became more and more evident, and medical practice became less and less purely empirical, and came to depend more and more on Physiology. But while the methods of teaching Anatomy were revolutionized, and it was clearly seen that no true knowledge of this science could be gained by lectures alone, no such reform occurred in the teaching of Physiology; and, until quite lately, it was supposed possible that the student could obtain a knowledge of the functions and modes of action of all the various organs simply from a course of lectures or from text-books.

Is it possible to acquire such a knowledge of Physiology as will be of any service in the study of Medicine in this way?

Let us consider this in regard to the four divisions of Physiology:—

1*st*, Is it possible to learn the methods of investigating the conditions of the various organs by lectures alone? About this there can be no doubt. It is absolutely impossible. Do you imagine you could count the corpuscles of the blood after the most lucid account of the process from a lecture? Do you suppose you could take a tracing of a pulse or of a heart after a mere lecture on the subject? Do you suppose you could examine a urine after a description of the methods employed? It is absurd to imagine for a moment that you could do so. It is impossible to learn these methods from lectures. You might as well expect to learn how to find the anterior tibial artery from a lecture on the anatomy of the leg! And yet teachers attempt to instruct, and students attempt to learn, such matters from lectures! No wonder the hospital physician says that the study of Physiology is useless, and twits the unfortunate teacher, on sending his men to the medical wards, as ignorant of the practical details of the subject as if he had never been inside a Physiology class-room.

2*nd*, Is it possible to learn what is the normal mode of action of the various organs from lectures? Again I say, No! Do you think you would know if your patient's pulse was normal from hearing me describe the normal pulse? Do you think you would know if a urine were normal after hearing me describe it as a "pale, amber-coloured, transparent, acid fluid?" It is only by feeling the normal pulse, by examining the normal urine, that you can know their characters. Of course I can teach you something of the normal conditions by lectures. Much of our information in regard to these conditions has been gained by long and troublesome experimental investigation, which it would be impossible to repeat before you. And the result of such investigations may very rightly be presented to you in the form of lectures.

3rd, Can you learn from lectures how to investigate the various conditions modifying the activity of the various organs? No more is it possible to do this than to learn from lectures the condition of the organ. The disturbance of an organ is frequently due to a changed condition of some other part, and hence the investigation of the conditions causing the disturbance is simply the investigation of the condition of these parts.

4th, The various conditions which affect the activity of the organs have been formulated as the result of extensive and painstaking investigations, and may very conveniently be placed before you in the form of lectures.

You will thus see that the use of lectures and text-books in the acquisition of Physiology is very limited, though it has a perfectly definite and by no means unimportant place. But clearly Physiology cannot be learned from these alone. Think of any one attempting to teach Anatomy thus in the present day! And yet teachers pretend to teach Physiology, and students imagine they master the science, from a course of 100 lectures. It is nonsense. Practical work is as necessary in the study of Physiology as in the study of Anatomy; and I trust that the day is not far distant when the student will look upon the physiological laboratory as he now does on the dissecting-room,—as a place in which to spend several hours a day, and not merely a wretched three-quarters of an hour during a short so-called "practical" class.

Already, in every country but Scotland, the true method of learning and teaching Physiology is recognised; and many of us hoped that the Commission which has recently legislated for the Scottish Universities would have seen the wisdom of advancing with other schools. But in this, as in everything else, the Commission has done no more than stereotype every deficiency of our system; and we shall owe it to the energy of teachers and students, and not to the wisdom of the Commission, if our Scottish Schools are not left in the rear, instead of, as formerly, occupying the van of advancing science.

Yes, Physiology, like Anatomy, must be studied practically if it is to be of any use in Medicine. You must get up *practically* the methods of investigation, you must get up *practically* what is the normal mode of action of the organs, and you must study *practically* how to investigate the factors modifying the activity of the organs.

Do you know how most men come to grief in Physiology in the Second Professional Examination? It is through ignorance of this practical knowledge. The examiner asks himself the question, "Is this man fit to go to the medical wards and begin the study of Medicine?" And if he finds him deficient in practical training, he is bound to reject him.

Therefore, I implore you to study Physiology practically. And instead of smoking and gossiping, as you slowly and carefully remove each bit of fascia from the fasciculi of a muscle, spare some time for the training of yourselves in the physiological laboratory for your study of Medicine.

Yet I fear there is little use in my preaching these views to you. In medical study, as in everything else, fashion plays an important part; and in Edinburgh it is the fashion to be seen for so long each day in the dissecting-room. It is not the fashion to appear in the physiological laboratory. It is the fashion to attend an infinite number of demonstrations on Anatomy; but not a moment beyond the lecture hour can be spared for Physiology. The result is that, while the student finds his Anatomy examination very easy, a set of elementary questions from his physiological examiners proves too difficult for him, and he comes to grief. Now the Physiology examinations are yearly becoming more and more practical, and so long as the present fashion of dividing the period of study so unequally between Physiology and Anatomy persists, the number of failures in Physiology must increase.

The cure of the matter lies in your own hands. Study Physiology practically and in such a way that it will be of use in Medicine, and you need fear no two examiners.

But you say, What are we to do in the physiological laboratory? In the dissecting-rooms we have our anatomical regions to dissect and master—do you offer us the same definite work?

Certainly I do. In the laboratory, microscopes and histological specimens will always be at your disposal; and it is from these specimens that you should learn the minute structure of the body, and not from books and diagrams. Do you expect to know epithelium or muscle, or nerve, from the study of diagrams accompanied by descriptions, however detailed?

In the laboratory, further, you can study the use of all the important pieces of apparatus used in physiological and medical study. It is there you must learn how to use the sphygmograph, the cardiograph, the ophthalmoscope, the laryngoscope, and other pieces of apparatus,—and this you can very well do on one another. These are the things you want to know, and not the construction of little used and complicated physiological machines devised for some special research. Further, in the laboratory you can practise the methods of examining and testing urine, blood, and other organic matters.

Thus you see there is no lack of work to be done in the laboratory by those who desire to fit themselves for their future study of Medicine.

From what I have said I may be accused of taking a too utilitarian, if not a low and restricted, view of the position of Physiology. But I have not been discussing the position of the science in its wide and philosophic aspects, but merely attempting to fix your attention on those parts which you, as practical students of Medicine, must thoroughly master.

Dealing, as Physiology does, with every problem of vital action, with the growth and nutrition of the lowest fungus, and with the complex mental processes of the human brain, and leading, as it does, to that consideration of that question of all-absorbing interest—What is life? it must be admitted that no other science has aims of such wide interest or of so great importance.

Physiology is the application of chemistry and physics to living matter, and it may thus be considered the highest development of these sciences. It is on Physiology that all the more abstruse sciences dealing with mankind must be based. Psychology is nothing more than the application of Physiology to the more complex brain processes. Sociology, if it is to be of any value to mankind, must rest upon a physiological basis.

So much for its wide importance. As a means of education no science tends more to develop the powers of observation and the faculty of correct reasoning, or more powerfully to stimulate the imagination.

Were you, therefore, men of leisure and not over-worked medical students, I should ask you to direct your attention to the broader and more philosophic aspects of the science. But I know that most of you have not the time; that some—perhaps from overwork—have not the mental vigour; and that some, from defective education, have not the training and adequate knowledge of cognate sciences, which are essential for such studies.

I trust that some among you have the necessary qualifications—that some of you are gifted with an imagination which will enable you to see the widely ramifying interests of each part of the science. And with these my difficulty will be, not to widen their interests, but to keep their attention sufficiently concentrated on the less entrancing but more practically useful parts of the subject.

I know there are in every class of Physiology students who will not work. Some because they are naturally too lazy and incapable, some because they have not the strength of character and perseverance to compel themselves to face and master a difficult subject. With these I have nothing to do. The most fortunate thing that can happen to them is to be rejected at an early examination, and to be removed from the study of Medicine. We do not want such men in our profession,—a calling which requires energy, mental vigour, determination and self-denial more than any other walk in life. Such men, if they pass, not only fail in their life's work, but, in their failing, degrade the profession as a whole.

Some, again, neglect Physiology because it does not bring them face to face with patients and practice. These men will tell you they don't want to be scientific men, but to be practical doctors. I trust that what I have said will convince these—if any such be present—that they can never hope to be good practical men without a thorough knowledge of the Institutes of Medicine.

You are adopting a profession of grave responsibilities, and the man who fails to train himself in every way for his lifelong battle against disease and death, is as guilty as the signalman who, by the neglect of duty, causes the death of those who trust to his watchful care.

V.—CLINICAL LECTURE ON A CASE OF FRIEDREICH'S ATAXY.

By Alexander James, M.D., Physician to the Royal Infirmary.

J. B., æt. 26, single, a soapboiler, was admitted to Ward 30 on October 17th, 1893, complaining of weakness in the legs.

History: *Family.*—He is the fifteenth of a family of sixteen children, eight of whom died when young from causes unknown to him. Of the remaining eight, four are dead, two (sisters) of phthisis, and the others of causes which he cannot ascertain. His parents are both alive, the father in good health, the mother suffering from rheumatism. No history of paralysis or of fits is in the family.

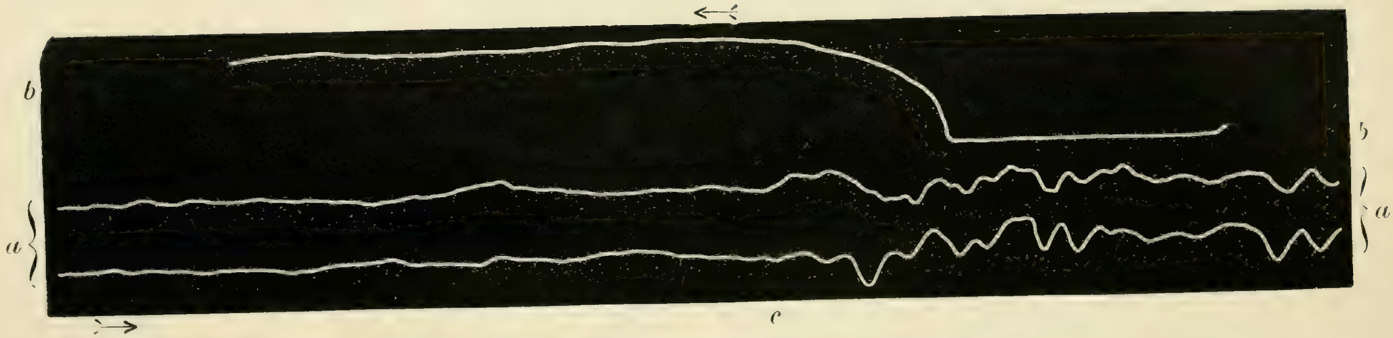
Personal.—Up till his present illness, which, according to his own account, began about six years ago, his health has been very good. He has never had syphilis. At work he has been, however, much exposed to sudden changes of temperature, and for the last seven years he admits having been in habit of drinking to excess on Saturday nights. His present illness seems to have begun six years ago. At that time his speech became so affected that he had difficulty in making himself understood. According to his own account, this speech impairment came on rather suddenly, and without cause. After six months his speech seems to have improved somewhat, but has been since and is now markedly impaired. Three years ago he noticed for the first time that he was apt to stagger when walking. This was whenever he was in the dark, and he had then to guide himself with his hands in order to prevent himself falling. Six months later he noticed that his hands trembled when he used them. The staggering in walking and trembling in the hands have both been gradually getting worse. He has been under treatment in hospital and out of it by massage, electricity, nitrate of silver, etc., but, he states, with no beneficial result.

Present Condition.—Height, 5 ft. 7½ in.; weight, 9 st. 7 lbs. He used to weigh about 11 stones, but his general nutrition and muscularity are still fairly good. On examining him when stripped, some patches of chloasma were observed on the chest and abdomen, and a distinct lateral curvature of the spine was detected. On careful inquiry as to this, we found that it had probably been in existence about eight years. He himself had no idea that his spine was curved, but when we asked him how long his right shoulder had been noticed to be lower than his left, he stated eight years as the probable time.

NERVOUS SYSTEM: *Sensory Functions.*—At present there are no abnormal sensations except an occasional aching, not severe, in the loins. A fortnight ago he states that he felt for the first time a slight feeling of formication in both feet. Sensibility to touch, pain, and temperature is everywhere unimpaired. As regards special senses, sight is not impaired either for near or distant vision, and there is no diminution of the visual field in either eye. Colour vision is normal. The pupils are equal, and react readily to light and in accommodation. There is no paralysis of any of the ocular muscles, but when the patient is asked to look at an object placed to the extreme right or left there is some slight lateral nystagmus, affecting chiefly the eye that is directed outwards. With the ophthalmoscope no morbid changes can be detected. Hearing, smell, and taste seem normal. His muscular sense (sense of weight) is little, if at all, impaired, but his sense of locality is distinctly faulty. Thus, when with eyes closed he is asked to bring his index fingers together, or to touch the point of his nose with one or other index finger, or to touch some point on one leg with the toe of the other foot, etc., he is invariably wide of the mark.

Motor Functions.—Voluntary motor power is rather impaired both in arms and legs. With the dynamometer the right hand registers 35 and the left 30, but whether the rather low grip-power is due to impaired conduction on the part of the voluntary motor nerve tracts or to feeble musculature it is difficult to say. This impairment of voluntary motor power seems to exist equally in arms and legs. The legs are, of course, much stronger than the arms, but proportionately their loss seems about the same. On testing the relative power of the flexors and extensors of the fingers and wrist, we found that in the former the power was about twice as great as in the latter. [Gowers says that "the flexors suffer more than the extensors, and the weakness in the flexors of the ankle may permit some degree of talipes to occur."] In our patient there is as yet no evidence of talipes. The electro-contractility in the muscles of his arms and legs showed no difference from that of health.

Reflexes.—The plantar and cremasteric are fairly well marked and equal. The abdominal and epigastric can hardly be elicited. The knee-jerk is absent on both limbs, and there is absolutely no trace of ankle-jerk or elbow-jerk or of clonus. As regards organic reflexes,—micturition, defæcation, generative power, respiration, and



a Taxograph and *b* Dynamograph tracings, reduced one-half size.

Tracing *a* is from left to right, and the letter *c* shows the time at which the patient closed his eyes.

Tracing *b* is from right to left, and the patient was told to grasp the dynamograph slowly.

deglutition are normal, though he states that about a month ago he noticed temporarily a tendency to choke on swallowing hurriedly; this has not troubled him to any extent since.

Equilibration and Locomotion.—If he attempts to stand with his feet together and his eyes closed, he sways about for a little, and then falls. It is worth while here to notice that it has been stated by some observers that the equilibration disturbance of Friedreich's disease is fundamentally different from that of ordinary tabes. Thus—here I quote from Ladame[1]—"whilst in tabes closure of a patient's eye makes him lose his equilibrium because he has no longer notion of the position of his limbs, in Friedreich's disease it is in consequence of choreiform instability. The patient sways whether his eyes are opened or closed; but in the latter case, having lost the control of vision, the swaying movements easily pass the limits of equilibrium, and he falls, although he may have preserved the notion of the position of his limbs." Of our patient I do not think this statement holds at all, and a tracing with the taxograph bears this out (tracing *a*). With his eyes open the lines are fairly even, and with them closed the undulations are exactly like those of an ataxic patient. In locomotion there is difficulty; the feet are lifted high, thrown forwards and outwards, and the heels brought down heavily on the floor. The gait is distinctly ataxic in character. When asked to walk backwards, he fixes his eyes on some object in front of him, and walks, however, better than we expected he should. When the patient is standing or moving about, a jerking and choreiform tendency can be seen in the arms when they are made to perform any movement. He can usually, however, when asked, hold his hands out quite steadily, but he has some difficulty in buttoning his clothes, in writing, or in picking up a pin. When standing on his feet or raising himself in bed his head is also seen to perform slight jerking nutatory movements.

Cerebral and Mental Functions.—Giddiness has always been a prominent symptom. His intelligence is good; he understands readily what is said to him. His memory is good, and he sleeps well. Speech is impaired; there is hesitation in getting out the words, but he says that this symptom is better than when he noticed it first, six years ago. The tongue, when protruded, shows some slight fibrillar contractions, but there are no tremors about the lips when he speaks. With the exception of the heart, which shows some increase of its area of dulness to the left, and the possible existence of a slight amount of aortic valvular mischief, the other viscera are perfectly healthy. [It is interesting to note that heart troubles are very common associates of Friedreich's disease, and this point, and the possible connexion between the morbid appearances in the spinal cord and the vascular and cardiac lesions, have been drawn attention to in an interesting way by Newton Pitt.[1]]

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[1] *Brain*, vol. xiii. p. 467.

In this patient we have, I believe, an example of Friedreich's ataxy. At first sight, when we observed his ataxic gait in walking, his inability to stand with his eyes closed, and his absent knee-jerks, we for a moment thought of ordinary locomotor ataxy. But the absence of the characteristic initial lightning or girdle pains, of any impairment of tactile, temperature, and other sensations, of bladder trouble, of the Argyll Robertson pupil, and the presence of speech impairment and of jerking movements of the head and eyes, convinced us that it did not correspond with that disease.

We next thought for a moment of multiple cerebro-spinal or disseminated sclerosis. Certainly this disease, presenting great diversity in different cases as regards the amount of sclerosis and the localities where the sclerosis may exist, offers an anatomical explanation adequate enough for the symptoms which he presents. Some sclerosis of the postero-external column of the cord would account for the absent knee-jerks; some slight sclerosis of the direct and cross pyramidal tracts would account for any little loss of voluntary motor power in the arms and legs, and possibly also for the jerking character of their movements; a sclerosis of the cerebellar tracts in the cord and of their continuing fibres in the cerebellum would account for the equilibration disturbances and the giddiness, whilst sclerosis higher up in pons or crus would account for the impairment of speech, the jerking movements of head, and the nystagmus. But although it is interesting to note that by two such observers as Bourneville and Charcot Friedreich's ataxy was likened to a combination of this disease and tabes, the clinical features are not those at all characteristic of multiple sclerosis. The speech impairment does not present the slow stacatto character, the nystagmus is not so marked, the movements of the limbs, when movement is performed, have a jerky character rather than the tremblings of multiple sclerosis, and there is an entire absence of the apoplectiform attacks seen in this disease. Again, the deep reflexes are lost in our patient, and not increased, as they are so markedly in cases of multiple sclerosis.

We have, therefore, concluded that the case is one of hereditary ataxy or Friedreich's disease, or, as Gowers prefers to call it, hereditary ataxic paraplegia. Now, here the first consideration which will occur to you is that to the term hereditary no great value is to be applied, because we have had no evidence of heredity in the case of our patient. This is certainly the case, and it would as certainly have made our patient appear to be a mere typical example of the disease had we been able to elicit evidence of heredity. But, as we remembered the other day when taking his case, it does not follow that the heredity or family tendency is not present. We can easily understand how a man in the position socially of an

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[1] *Guy's Hospital Reports*, vol. xliv. p. 392, etc.

Infirmary patient may not be possessed of very complete or correct information as to the health of his relatives, and more especially when he has come in, as it were, at the fag end of a family of sixteen.

We have only to remember that, although this may not be altogether true here, in this disease the tendency to run in families is so well marked that the term hereditary has been applied to it. Perhaps the best illustration of this is the fact that sixty-five cases reported by one observer occurred in nineteen families.

As regards age, this affection shows itself at an earlier age than does ordinary ataxy, the second dentition and puberty being about the commonest periods for it to appear. Our patient is now 26, but he gives six years ago as the time when the speech became affected, and eight years ago as the time when the spinal curvature was first noticed. As this spinal condition is due to muscular weakness, and may be regarded as a symptom of this disease, it would give 18 as the age at which it first developed in our patient.

As regards sex, all that need be said is that it seems rather more common in men; and as regards other points in the etiology we have to remember that, being so distinctly due to congenital causes, a history of excessive exertion, exposure, alcohol, and syphilis, so common as etiological factors in other nervous affections, does not play such an important *rôle* in this disease.

The symptoms of hereditary ataxy as they have been described in other cases are markedly present in our patient. With absence of lightning pain or girdle pain his cutaneous sensibility to touch, pricking, temperature, etc., are unimpaired, and with regard to his special senses nystagmus is the only abnormality. His knee reflexes are entirely absent, but his visceral reflexes—bladder and rectum—are absolutely normal. His equilibration in walking and standing is that of an ataxic patient, and the impairment of the co-ordinating power in his upper limbs is a prominent feature. Lastly, the jerking movements of the head and neck, the disturbance of speech, and the giddiness, which are all symptoms of Friedreich's ataxia, he presents in a marked degree.

The mode of onset of the symptoms in our patient presents some peculiarities. Ordinarily, though some nystagmus may be an early occurrence, the legs are first affected, then follow the arms, and then the speech disturbances. Our patient, however, states very definitely that his speech trouble was the first symptom, and that the legs and arms were not affected till three or four years later. Further, as we have already seen, he told us that the lateral curvature of the spine had been noticed some two years earlier than his speech trouble. Now this spinal curvature, due as it is to weakness of the spinal muscles, is usually one of the later symptoms. Hence, as regards onset of symptoms, this case presents peculiarities. [In a case reported by Topinard, which Ladame regards as a typical example of Friedreich's disease, lateral curvature seems to have been one of the earliest symptoms, for in describing the case we read,—"Towards the age of 11 years, at La Pitié, M. Michon proposed an operation to remedy a sinking of the left scapula."]

As regards morbid anatomy, the principal deviations from the normal in such cases seem to be that, with the whole spinal cord somewhat smaller in section than usual, there is well-marked sclerosis of the postero-median columns, and sclerosis in varying intensity of the postero-lateral columns, of the cerebellar and ascending lateral tracts, and of the pyramidal tracts. That there should be sclerosis of these tracts we can easily understand from the evidence of the interference in these cases with the transmission upwards of those sensory impulses which are necessary for muscular co-ordination and equilibration. But that the sclerosis of the postero-median columns should exist, and exist so markedly, is noteworthy, for, as you know, the impulses of tactile impressions have been supposed to pass up in these tracts as well as those of muscular sensibility.

Inasmuch as in cases of Friedreich's disease tactile sensibility, and, indeed, cutaneous sensibility of all kinds, is unimpaired, this consideration would seem to indicate that the postero-median columns are, like the cerebellar and antero-lateral ascending tracts, more especially concerned in the transmission upwards of those impulses which are required for muscular co-ordination and equilibration.

Are we to believe that in this patient the pyramidal tracts are much affected? Here we have to remember that in similar cases in which opportunities for post-mortem examinations had been obtained, changes in these tracts were not very marked, although existent. I believe that in our patient they are not blocked to any extent. The voluntary motor power is still considerable, and the hand-grip with the dynamograph shows a fairly even line (tracing *b*). But I think it extremely probable, however, that in the ordinary progress of the disease the involvement of these tracts may become more marked, so that the affection may become a mixture of postero-lateral sclerosis and tabes, as Gowers has described it. Ordinarily, as you know, in cases of postero-lateral sclerosis the increased knee-jerk is an indication of the affection of the pyramidal tracts, but of course this help cannot be expected in Friedreich's disease.

The giddiness, nodding movements of the head, and the speech impairment indicate some—probably slight—sclerotic changes in the medulla and pons, and possibly also in the cerebellum, such as have been described in similar cases.

As regards pathology, it is believed that this disease is mainly due to an innate defective nutritive power. Its tendency to occur in families, and to show itself at an early age, before excesses of any kind have had time to bring about a premature wearing-out of the nerve machine, seem to indicate defective endowment rather than excessive expenditure.

On the question of prognosis all that need be said is that the disease is progressive, but slow, and may last for many years.

As far as we are at present able to judge in this individual case, it seems to be rather more rapid than usual, and the statement he vouchsafes, that he has lately at times felt some tendency to choke in swallowing, is of some importance in connexion with possible involvements of parts in the bulb. The precise cause of this deglutition difficulty has been said to be an ataxy of the tongue.

For treatment, attention to the general health, massage, electricity, arsenic, phosphorus, and nitrate of silver have all been recommended. The tendency to contractions should also be remembered and guarded against.

REFERENCES.

Brain, vol. xiii. p. 467. Dr P. Ladame.

Brain, vol. xv. p. 250. Dr Sanger Brown, with Discussion by Dr Ormerod and Professor Bernhardt.

Guy's Hospital Reports, vol. xliv. p. 369. Dr Newton Pitt.

VI.—NOTE OF A CASE OF VESICO-RECTAL FISTULA.

By N. T. BREWIS, M.B., F.R.C.P.E., Lecturer on Gynæcology, Edinburgh Medical School; Gynæcologist, New Town Dispensary, etc.

(*Read before the Obstetrical Society of Edinburgh, 8th November* 1893.)

ABNORMAL communications between the bladder and rectum are so extremely rare in women, that I think I am justified in recording a case of this nature which occurred in my practice lately. Unfortunately the patient was a woman of deficient mental power, so that it was with difficulty that a consistent history was obtained from her. For the following notes I am indebted to my clinical assistant, Dr Robert Riddell.

Mrs R., æt. 33, residing at Freuchie, Fifeshire, was recommended to me by Dr Mackay of Falkland. She had been married eight years, had had no children or miscarriages, and was admitted to the Cambridge Street Home for Women on 9th October 1893, complaining of passing her urine per rectum.

Her illness was of five years' duration. Four years ago Dr Mackay sent her to the Royal Infirmary, but she refused to stay, and since then her condition has become gradually worse.

Menstruation began at the age of 15, and was regular till her present illness. It lasts three days and is of the 28-day type. Sometimes it is very profuse, and is always unaccompanied by pain. Now she is irregular as to time. She was last unwell on

October 6th, and on that occasion saw very little. When she micturates she says more comes by the bowel than by the proper channel, and during the act there is great bearing-down pain. She complains also of diarrhœa, and after defæcating feels very weak and exhausted. Her general health has been good until the present trouble. She is one of a family of fourteen, of whom thirteen are alive and healthy. Her mother has had her elbow-joint excised, probably for tubercular disease. The patient was examined under chloroform, when the uterus was found to be retroverted, fixed, and pushed over to the left by a firm swelling, which occupied the right half of the pelvis. The bladder contained about two drachms of urine mixed with particles of fæcal matter. The sound passed into the viscus 2½ inches in the right, while in the left it passed nearly its whole length. A finger introduced into the rectum recognised a band of thickened cellular tissue surrounding the rectum at a point about a finger's length from the anus.

Immediately beyond this constricted portion the sound was felt coming through a valvular slit in the bowel. The ampulla was widely distended with urine. The finger could be passed through the above-mentioned opening in the bowel, and could feel the bared surface of a firm tumour, apparently situated between the layers of the right broad ligament. The retroverted uterus was behind and to the left of the bowel perforation.

Two interesting points are manifest in this case. The first is the apparent cause of the fistula. This, as far as can be ascertained from the imperfect history and from the physical signs, would indicate that an abscess had formed in connexion with the tumour in the cellular tissue, and that the pus had found its way simultaneously into the bladder and rectum. The fistulous tract was evidently extra-peritoneal, its course being from the left side of the bas-fond, past the left side of the cervix on to the rectum.

The second point of interest is the manner in which the ampulla of the rectum performed the office of a urinary reservoir. That the patient was able to retain urine in the rectum for hours at a time showed that the anal sphincter was equal to take in itself the duties of the neck of the bladder.

In cases of injury to the vesical neck, where there has been extensive sloughing, and where obliteration of the vagina has not been sufficient to prevent constant dribbling of urine, Baker-Brown and others have made an artificial recto-vaginal fistula, so as to transpose the function of the bladder to the rectum. Fritsch mentions two patients operated on in this way, who passed their urine through the anus without the least inconvenience.

With regard to treatment in Mrs R.'s case, it was my intention to open the bladder by the supra-pubic method, and close the mouth of the fistula by means of sutures, but the patient would consent to no operative interference.

VII.—VALEDICTORY ADDRESS TO THE MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

By Joseph Bell, M.D., F.R.C.S. Ed.

Gentlemen,—I have now to occupy the Chair for the last time as your President. Two years ago, when by your kindness you placed me in it, I ventured to promise that if I could not be a brilliant Chairman, at least I would try to be a diligent one, and regular in my attendance. I have not missed one minute of the meetings of the Society during these two years, except when in May 1892, by the orders of my College, I had to be in London on a deputation business on the very day the Society met.

I would now with much gratitude simply leave the Chair and ask my successor to take it and do his duty better than I have done; but it is an old custom of this Society that the retiring President should make a short valedictory address regarding his period of office.

New Members.—The Society keeps up its members well. During my term of office forty-eight new members have been elected. We have lost two by resignation, and it is now my duty—a sad one—to read the names of those members who have been removed from our roll by the hand of death. Fortunately, during my term of office the list has not been a long one, but it contains the names of some men greatly beloved, who justify a word of remembrance and regret.

Francis Brodie Imlach will not soon be forgotten by those of us who knew and loved him, from his many high qualities of head and heart. Successful in his own branch of the profession, he was able to retire from its exacting duties many years before his death; and these years were not idle, but devoted in many ways to the best interests of science and of medicine. He was a modest, retiring man, and did not often read papers or share in debates in the Society. Of a noble presence, and with most courteous manners, his striking personality and kind heart will keep his memory green. Had he survived till now, he would have attained his jubilee as a member.

James Donaldson Gillespie, who, like his old friend Imlach, was one of the sunniest-natured and most tender-hearted of men, for many years identified himself with the fortunes of the Society, and was one of its most zealous and successful office-bearers. Successively Councillor, Secretary, and President 1875–6, few men of this generation have done more for the Society than he did, and his communications and papers on many subjects were most valuable and suggestive.

I need only allude to his papers on Hydrocele, January 1862, and

Excision of the Wrist, December 1870, as distinctly important contributions to practical surgery. His work in the Lock Hospital bore fruit in an admirable article on Condyloma. Two cases, reported at different times, in which death had taken place during the administration of chloroform, testified to the zeal for truth and unselfish disregard of his own credit. If every case of chloroform disaster was reported with equal care and accuracy, the profession would soon have data of real value to help in the estimation of the percentage risk in chloroform administration and the details which make for danger. His special experience in a great hospital was utilized on two separate occasions for our instruction,—once when, in June 1862, he gave an account of an Epidemic of Scarlet Fever in Donaldson's Hospital, and again in May 1870, when he described an outbreak of Typhoid in the same Institution. His valedictory address in leaving this Chair in 1878 was a thoughtful, able, and kindly discourse. One remark he made, which seems of considerable importance on the subject of the practice of permitting no discussion to take place on cases or specimens exhibited:— "It appears to me that, as our transactions are regularly published in the *Medical Journal*, the tacit approval of the Society would seem to be accorded to opinions uttered by the exhibitors, which I for one would occasionally like to call in question. While revising the records of the last two years, I found various statements about cases which would have been much benefited by passing through the ordeal of discussion, and I see no reason why the members of this Society should not be permitted to make remarks on subjects, often of more practical interest than the regular written papers, provided the President keeps the discussion within due limits."

Dr James Young has died since our last meeting, and we will all miss from our Society the bright eagerness of attention with which he welcomed anything in a paper or speech that struck him as new or interesting. A gentle, warm-hearted, amiable man, he was beloved by his patients, and by the friends who knew him best. He did not push himself forward at all in the Society. I can discover only one paper of any length from his pen, "On the Wire Seton in Hydrocele," 1862. Oddly enough this apparently mild and harmless proposal, which has been frequently reinvented since, excited the wrath of some of the surgeons, and drew out a discussion of considerable briskness, Dr Gillespie taking one view and Dr Young another. *Tantæne cælestibus iræ!*

To our sister Society, the Obstetrical, Dr Young was a most diligent and valued contributor. It is pleasant to think that family, of which Dr James Young was the second generation in medicine, is still to be kept up in Edinburgh by his son Dr Richard Young, one of our members.

Dr Stewart of Kirkwall was one of our members; but eminent as he was in his own district, I cannot discover that he ever took part in our meetings except as an auditor. He held many of the most important public appointments in the capital of the Orkneys.

A Word on our Meetings.

Looking back on the work of the past two years, the Society has a right to be proud, as there has been no lack of material. Papers, patients, and specimens have been numerous and varied. Many of the members have contributed, and to some we are specially indebted for many valuable communications. Let me first recall to your memories some of those extra meetings convened for a special purpose.

On January 6th, 1892, Mr Harold Stiles kept up the interest of the Society during a long and beautifully clear paper on the Pathological Anatomy of Cancer of the Breast, with special reference to its Operative Treatment. In emphasizing the absolute importance of complete removal of the organ, he showed us how the extent of area of the edges of the breast was generally under-estimated. He pointed out that a knife uncleaned during the operation might unconsciously leave behind it a cancer germ in the cicatrix, and he proved to us how often recurrence takes place in neglected axillary glands and in unremoved pectoral fascia,—a brilliant demonstration of work, which the universal consent of surgeons has accepted as an epoch-making contribution to Surgery.

On June 22nd, 1892, another most important subject was introduced for discussion in an exhaustive paper by Dr Brakenridge on the Treatment of Pernicious Anæmia by the Transfusion of Human Blood. The discussion was a most brilliant and valuable one, and you will not have forgotten Dr Affleck's interesting case, the convincing clearness of Dr John Duncan's account of his operations of transfusion, their difficulties, dangers, and successes; and then the varied and valuable discussion which followed.

Another most interesting special meeting was held on February 15th and 16th, to discuss the subject of Myxœdema and its Treatment, and you will remember with what an array of talent it was methodically brought under the notice of the Society. Our indefatigable Secretaries had well marshalled their men. Dr Byrom Bramwell led off by a most lucid picture of its clinical features. Professor Greenfield's disquisition on its pathology and morbid anatomy was exhaustive, and was illustrated by a large number of microscopic and naked eye specimens, which were on view in the sideroom, and in addition this communication was illustrated by limelight views of the tissues affected. While the symptoms and pathology were still freshly impressed on our minds, Dr Lundie read an account of a most characteristic case, described it with a brightness and felicity of style which held the Society entranced, and without being tedious gave a *résumé* of the literature of the subject and the different methods of treatment. By this time the evening was far spent, so on the motion of Dr Affleck the discussion was adjourned till next day at 4·30—at which time, to a large and enthusiastic meeting, he began a discussion on the whole subject of Myxœdema, and also alluded to the treatment of Sporadic Cretinism on the same lines and showed an excellent case. Dr John Thomson followed this up by showing two most characteristic cases of Sporadic Cretinism, in one of which the results of treatment were perfectly astounding in their rapidity and success. Dr Byrom Bramwell then exhibited two typical cases of Myxœdema—one in an elderly woman and in a younger one—in which the change and improvement were most remarkable under thyroid feeding. He also showed a remarkable case of Psoriasis treated in the same manner, with marked success. Dr Russell and Dr John Thomson showed cases of Myxœdema as yet untreated, and Dr Bruce another undergoing treatment, but in which the cure was as yet incomplete. After Dr Russell had exhibited some sheep's thyroids, Dr Melville Dunlop related briefly, but most clearly, the history and progress of some six cases he had under his own care; and Dr Church also gave us the benefit of his experiences of the disease. The Society was then honoured and gratified by an interesting speech by Dr George Murray of Newcastle, the originator of the treatment by thyroid feeding, who, with great clearness and frankness, told us both of his successes and his failures. After Drs Davis, Stalker, and Foulis had added their own experiences, Dr Thomson related the post-mortem appearances seen in a case which died during treatment,—thus rounding off a most important two days' discussion, which marks an epoch in medical practice, and might stand as a model of the highest function of a great scientific society. One regretted the absence of Dr Clouston from the actual discussion, but his important note on the Mental Symptoms in Myxœdema enriches the very full report of the two days' work in the *Transactions* of the Society.

There were other outstanding meetings in which the Secretaries endeavoured, with marked success, to choose a special subject, or group of subjects, for discussion.

On the first of these occasions Dr Lockhart Gillespie introduced the subject of gastric disorders, by a most able and instructive paper entitled, "Some Practical Results from the Chemical Examination of the Contents of the Healthy Stomach," illustrated by limelight views. The paper was almost too good for its object, and did not invite or provoke much discussion.

The meeting in March 1893 was specially arranged for subjects bearing on the surgery of the abdomen. Dr John Duncan read us a paper on the Surgical Treatment of Gall-stones, which evinced much practical knowledge of the subject, set forth in his usual lucid and cultured style. Dr Rutherford Morison of Newcastle followed this up by a paper on Some Mistakes in the Technique of Abdominal Surgery. His boldness in operating, his dexterity in the adoption of simple means to valuable results, impressed the Society that if mistakes and accidents did happen, he at least would do his best to prevent them from occurring in his practice.

The May meeting was again arranged for the discussion of a special subject from two points of view. It was on diseases of the Appendix Vermiformis, with cases, and here again Dr Duncan and Dr Affleck were conjoined in a most valuable presentment of these obscure and dangerous affections, from the standpoint of the physician as well as the surgeon. Both branches of the profession were at one as regards both the pathology and treatment of this dread malady, and the Society were instructed both as to the necessity in many cases of relapsing appendicitis for an operation, and also as to the proper time to choose and the best method of performing it.

Where all the papers read have attained a high standard of excellence, it seems almost invidious to select some for special mention; but among others the following seem to stand out, either from their exhaustive character or originality.

Dr Sloan's case of Hystero-Catalepsy, remarkable in itself, was described with a realistic power and dramatic force which impressed its clinical features on the Society. Dr James exhibited all his well-known originality and scientific precision in his paper on Emphysema and Bronchiectasis; even if it did not convince every one that his theory was correct, no one could fail to be stimulated both to observe and to reason. Dr Philip showed great industry in his collection and collation of 1000 cases of Pulmonary Tuberculosis. Dr Alexander Miles deeply impressed the Society by his thoughtful, original, and well-reasoned theory of Cerebral Concussion. Dr Macpherson and Mr Wallace, in their joint paper on the Surgical Treatment of General Paralysis of the Insane, encouraged the Society to hope that something may yet be done to cure that hopeless malady. Dr Templeman of Dundee, in his able paper on 250 cases of Suffocation of Infants, touched on a subject interesting not only to the medical man, but to the magistrate and the social reformer.

Dr William Russell, in his Practical Results of the Investigation of Cholera in Germany, made a valuable contribution to that great and important question, How to prevent and how to combat a cholera epidemic. Mr Wallace told the Society what the cystoscope could do in the elucidation of the diagnosis of cases of Tumour of the Bladder. Dr Norman Walker read a paper on, and made a clear demonstration of, the microscopic condition which, in his opinion, constituted Rodent Ulcer; and Dr Robert Fleming's account of a case of Noma was enriched by a copious bibliography, and some interesting observations on the bacteriology of this obscure disease. Mr Caird recorded, in his own brief, incisive style, important contributions to Operative Surgery.

Time would fail me were I to recount even a few of the interesting patients that were shown to the Society. Drs John Thomson, Allan Jamieson, Mr Caird, Mr Alexis Thomson, Dr Cotterill, Mr Cathcart, and Mr Wallace were specially active; and other members showed Pathological Specimens and New Instruments of great value.

A RETROSPECT AND AN OUTLOOK.

A century since the days of Nestor is reckoned to include three generations of men, and it is thirty-one years ago since from this Chair my father delivered his valedictory remarks after he had finished his term as President of this Society. Perhaps you will excuse me if from its record I gather one or two points which may interest us historically, and possibly aid us in making progress. To the seniors among us a melancholy pleasure is found in dwelling on the honoured and beloved names of those who in their day had read papers to the Society. The amiable and courteous Patrick Newbigging had narrated the case of his revered friend and teacher, Dr William Pulteney Alison. Alexander Wood and Skae, both the Begbies, Matthews Duncan, Syme, Spence, Handyside, and Gillespie had delighted and instructed the Society. All these, and many more less-known names, have now joined the majority. But many who still remain to us as seniors are in that biennial retrospect recorded as having done good work. W. T. Gairdner was discussing the use of alcoholic stimulants in hospital practice. Dr T. G. Stewart read a most creditable paper on the Waxy or Amyloid form of Bright's Disease, the first step in the work, both pathological and clinical, which has proved a ladder to the highest position in the teaching of clinical medicine in Scotland. Dr P. H. Maclaren recorded a case of Abscess in the Cellular Tissue surrounding the cæcum, which ended in recovery, and Dr Maclaren's reflections on the case were highly creditable to his judgment and sound professional knowledge. Here, again, we have probably the earliest publication of one who now occupies such a high position in Edinburgh Surgery, and still looks as if he was good for a few more generations of work. Heron Watson showed, in a case interesting both pathologically and clinically, the firm grip he already possessed of the art of treatment, even in hopeless cases; for he utilized Dr Wood's new method of the hypodermic injection of morphia to relieve suffering in a case of bladder cancer. Syme's communication was on a subject still interesting, and still in process of improvement.—the radical cure of Inguinal Hernia by a modification of Wützer's method by invagination of skin. I fear in the present day both Wützer's method and Syme's modification are deservedly forgotten.

Looking back on this old address, we seem to miss familiar words and dominant theories,—drainage of wounds is never mentioned, sepsis and asepsis, antiseptics and germicides, are alike unknown. Microbes and bacteria had not yet sailed or swam into the field of the microscope or the depths of the wound. Acupressure, however, had just been devised by the keen logical intellect of James Simpson, and Handyside's paper described one of the earliest, if not the very earliest, case in which it had been tried. Done under adverse circumstances, and for spreading gangrene, it was quite a success, and gave rise to a lengthened and full discussion of the new method of checking hæmorrhage.

This easy-tempered and calm generation can hardly realize with what heat of debate, flavoured by a tinge of personal animosity, such apparently colourless and neutral subjects as methods of checking hæmorrhage or the treatment of hydrocele by wire setons were discussed in the Society. The retiring President, in his own calm way, alludes to this in the end of his address, and describes the speakers taking their sides and giving forth their sentiments with more energy and warmth than might be expected in the calm atmosphere of scientific inquiry and professional responsibility. He even explains the absence from the meetings of many of the seniors of the profession by the distaste they must feel when, with a name and reputation already achieved, they find themselves brought into a position of hot, perhaps uncourteous, gladiatorship with much younger men, who have not yet the same dignity to imperil.

Our discussions certainly nowadays cannot be said to be too energetic, and certainly not discourteous: the great difficulty generally is to get up a discussion at all. The paper is either received with enthusiasm, or at worst damned by faint praise, or welcomed with an icy silence; and the remarks, when they do come, are more generally words of additional experience than searching criticism.

I sometimes feel that the pendulum has swung too far in the other direction, and that a good rattling criticism of a pretentious or tedious paper would be preferable to the polite indifference which is the worst that now is likely to befall it. A better explanation may be found possibly in the more optimistic view that now all the papers read before the Society really require praise and confirmation, because of their absolute perfection.

But the other point raised in the valedictory of 1862 is still a burning question. Many of the older and respected members of the Society had then virtually withdrawn from its meetings. Is it not so now? With some slight exceptions, which will come unbidden into all your minds, the names of many of the leaders of the profession in Edinburgh are never seen on our billets, and their forms are absent from our benches. Why is this? They certainly have not been alarmed by too energetic debate, or offended by the criticism of brilliant youth. Are they too busy? No; most of them are consultants, and, as a rule, we do not have consultations in the dark. Are they too old or too weak in health?

No; for they still can go out to dinner, to a concert, or even, on rare occasions, to witness a good play. Why is it that they do not join in our discussions, and learn from our papers? Their interest in the profession and its rewards is as keen as ever. Can we not find an explanation where we should always first seek one, in the primitive and simple desire for food and rest? Even the untutored savage does not like to leave his wigwam immediately after the great feast of the day, far less the wise physician. Thirty years ago five was the usual dinner hour, and on great occasions perhaps it might be as late as six. Now we are fortunate if we get a chance of our dinners by 7·30, and what chance has the Society against such a rival? To get to the Society at eight, one simply has to insist on a scratch dinner at seven, hurry over coffee, and start. How would it do to try an occasional meeting at five? That hour would allow two or two and a half hours before dinner, and might encourage a fuller attendance. The older members present will pardon an allusion to the history of another Society cognate to ours. The Medico-Chirurgical Club was a delightful adjunct to this Society. One Thursday in every month the members met at 9 P.M. to talk of the meeting of the preceding Wednesday over a frugal meal of spatchcock, finnan haddocks, and whisky toddy. Late dinners killed, or at least altered all that. Let us try to prevent late dinners killing our Society, and let us at least try the experiment of an occasional meeting at five instead of eight.

We have also had our trials and difficulties as to our place of meeting. The room in 117 George Street (to which we have now returned) was for many years an excellent central position. By some unlucky accident we lost it, and then migrated to the hall sacred to the University Education of Women, 15 Shandwick Place. This had its defects: it was up a very dark steep stair, and its acoustics were not good; but its distance suited the West-end members, and the tramcars passed the door. When the University opened its doors to women, the *raison d'être* of the Association ceased, and so the hall was parted with, and our Society was homeless. After two charming meetings in the hall of the Royal College of Physicians, most hospitably lent to us by the Council, we at last found refuge in the rooms of the Lyric Club in George Street. Dark, noisy, ill-arranged for ventilation, these rooms were redeemed only by the presence of some very comfortable armchairs, the race for the possession of which always ensured that some members of the Society were not only present, but early on the scene.

Our wanderings, homelessness, and general discomfort stimulated our energetic secretary, Dr Wm. Russell, to exertion. A Hall Committee was appointed, and many efforts were made and much trouble taken by him to light upon some suitable place, which we might either buy or rent on a lease as a sort of permanent home for the Society. A financial scheme was started, by which members were, by taking shares in a sort of limited company, to subscribe, according to their means and liberality, to the purchase of a hall. As yet nothing has been achieved; site after site has been discussed; buildings have been examined and treated for without success, and now we are starting a new session still in a hired house, to some of us with so many old associations as almost to entitle us to call it our own hired house. Doubtless, much good work will be accomplished in this humble room; but still there rises before my imagination a happy time when, by the joint liberality of the senior members of the Society and of the two great Edinburgh Corporations, a stately hall may be obtained, well lighted, comfortably seated, furnished with tables for microscopes and specimens, and suitable retiring-rooms for patients, in which all the learned and scientific societies related to Medicine in Edinburgh may find a home,—a sort of Academy of Medicine, where suitable rooms may contain the libraries and museums of each Society, where a pathological and also a physiological laboratory may be at the service of the younger men, where a cup of tea or coffee can be got when required, and where (perhaps this is Utopian) a room or two may be found for those members who make personal experiments on nicotine, or study the physics of an ivory sphere impelled by the impact of a leather-tipped cue. Those of you who have studied the early history of the Medical Society of Aberdeen know how much it, and, indeed, the Medical School of Aberdeen, owed to a wise bequest which started a very small society in a very handsome house. We do not ask for much: two really good houses in Charlotte Square, and a few hundred pounds for alterations, would be sufficient for our humble needs. Who will supply the want?

But a luxurious house and fine rooms are not the chief desiderata in a Society like ours. What we need for it to maintain its great reputation of the past, and extend it in the future, is zeal on the part of its members. Let the seniors come out and give their experience; let the younger ones try not to despise the ignorance of their elders; let each and all try to edify and instruct, and add to the store of knowledge and experience, experiment and practice, on which alone is real professional progress based. Brevity and precision in statement, careful excision of all superfluous detail and repetition, a determined extermination of every historical allusion to Hippocrates or Galen, Ambroise Paré or Scultetus, will give us time to discuss the papers, which, under these conditions, cannot possibly be longer than twenty minutes. I fear I have exceeded that wise limit, and will now end by thanking you most heartily again for the honour you did me two years ago by electing me to the honourable office of your Chairman, and for all the patience and forbearance you have shown me in my most unworthy fulfilment of my duties.

Part Second.

REVIEWS.

Pyogenic Infective Diseases of the Brain and Spinal Cord; Meningitis; Abscess of Brain; Infective Sinus Thrombosis. By WILLIAM MACEWEN, M.D. Glasgow: James Maclehose & Sons: 1893.

Atlas of Head Sections. Fifty-three Engraved Copperplates of Frozen Sections of the Head, and Fifty Key Plates, with Descriptive Text. By WILLIAM MACEWEN, M.D. Glasgow: James Maclehose & Sons: 1893.

IF the earlier half of the last quarter of the nineteenth century was a period of enormous progress in abdominal surgery, the result of a fuller knowledge of asepsis, the later half may be associated with similar progress in the surgery of the brain, rendered possible by the same great discovery. The scientific experiments in bacteriology of Pasteur and his school, brought by Lister and his followers into practical use, enabled surgeons to perform operations hitherto undreamed of with success. Cleanliness in its true sense was never understood till the germ was idealized into a tangible entity, to be defeated only by scrupulosity of detail. Encouraged by success in obtaining primary union after amputation, and safety after peritoneal operations, surgeons were prepared to attack any organ with a boldness hitherto only rarely exhibited, and brain surgery became more than a mere series of trephining operations which compound fractures had made unavoidable. Cerebral abscess began to be recognised as not a hopeless malady rarely discovered before the autopsy, but as really a warrantable operation promising a fair chance of success. Scientific experiment here again was the precursor of practical surgery, for without the knowledge of symptoms gained by the purely scientific work of men like Ferrier, Horsley, and Macewen, the data for the diagnosis and localization of cerebral abscess was wanting, and surgical interference would have remained a blind groping in the dark. The handsome volumes before us are from the pen of a master in the art of scientific experiment and practical application.

William Macewen has done and is still doing admirable work in surgery. His splendid power of work and his single-eyed devotion to the improvement of surgery, marked him as the man to fill the Chair of Systematic Surgery in the University of Glasgow, and with one voice the surgical world congratulated him on his appointment and the University on its choice. He has justified that choice and added lustre to that appointment by these admirable volumes, which are full of record of good work and of instruction to the profession. Had the work on *Pyogenic Infective*

Diseases of the Brain appeared ten years ago, the profession would hardly have been prepared to understand it or credit its results. In 1883, we are told in the preface, an eminent surgeon is reported in the *Lancet* to have said that a cerebral abscess was a thing one saw once in a lifetime; and even in 1883 Professor Macewen himself regarded the prognosis in such cases as most sombre.

Those who read this book will see how marvellously successful results have been obtained by accurate diagnosis and localization, and by thorough antiseptic methods in operating on such cases. While we are promised a chapter on the literature of the subject, as yet it is on his own work almost exclusively that this volume is founded. The first chapter is devoted to the Surgical Anatomy of the Temporal Bone,—its contents, nerves, sinuses, and membranes. Precise and detailed, it is not out of place as preceding description of operation, the success of which depends so much upon precision of anatomical knowledge. The second chapter deals with the Pathology of Cerebral Abscess and Meningitis. Beginning with extra-dural abscess, the different modes in which septic material finds its way into brain and membranes are carefully detailed. "In the great majority, if not in all cases, the peccant matter, which occasions both acute leptomeningitis and brain abscess, is organismal" (p. 52). These organisms "have most frequently been the streptococcus pyogenes and the staphylococcus pyogenes aureus" (p. 50). This whole chapter is most instructive, and is illustrated by cases, all of which repay perusal as showing the manner in which diagnosis is made, and the progress of the malady if undiagnosed and untreated.

The third chapter is on Symptoms. An instructive case (p. 92) shows the danger which may follow rash interference with the granulating masses which were supposed to be aural polypi, and which really may have acted as plugs, preventing for the time cranial sepsis. When detailing the respiratory symptoms in cerebral abscess a most remarkable case is reported,—one of cerebellar abscess discovered only post-mortem. For the purpose of opening the mastoid antrum the patient had an anæsthetic, and while the operation was proceeding the respiration ceased, while the heart continued to beat quite regularly. Artificial respiration was begun, and was continued for twenty-four hours without eliciting any response in the form of natural respiratory effort. The heart continued to beat during the whole time the artificial respiration was maintained, and even for a few minutes after. At the post-mortem examination a cerebellar abscess of considerable size was found, which no doubt exerted pressure on the respiratory centre. Case xxv., p. 137, is perhaps the most perfect example of an apparently hopeless case splendidly diagnosed and successfully treated. The fourth chapter is on thrombosis of the intracranial sinuses. Two varieties, *marasmic* and *infective*, are described and differentiated. The pathology and symptoms are detailed, both generally and as indicating the involvement of spinal sinuses. Of these the sigmoid sinus and the jugular vein are probably the most frequent and most important, from the relation of the middle ear and the mastoid antrum. Chapters V. and VI., on Treatment and Results, are full of instruction and interest of the most practical kind, and deserve careful and repeated perusal. Professor Macewen recommends a burr in preference to a chisel and a trephine for opening and cleaning the mastoid antrum. The directions for exposing and cleaning cerebral or cerebellar abscesses are precise and intelligible. In fact, it is hardly possible to imagine a more admirable text-book from cover to cover, or a more difficult and important field of surgery. We congratulate Professor Macewen on his work, and his pupils and his University on the teacher they have been so fortunate to secure.

The *Atlas of Head Sections,* in various directions, is a valuable and important addition to the series of plates from frozen subjects. By this means the real relation of the different parts of the brain to the surface and to each other are given, and a much more accurate notion of the true shape of the cranial contents is obtained than that derived from the sections made after the soft elastic structure has been removed from the bony case which kept it in position.

Traité de Chirurgie de Guerre. Par E. Delorme, Professeur à l'Ecole d'Application de la Médecine Militaire. Paris: Felix Alcan: 1888-1893.

Five years have elapsed since the first volume of this important work was published; the second and larger volume has only recently been issued. The former treats of the history of military surgery and of wounds of the soft parts, the latter of injuries of the bones and of the special regions of the body, and of the arrangements and regulations adopted by the French army for dealing with its wounded in time of war. The civilian will probably find more interesting that portion of the first volume which is devoted to the history of military surgery from the earliest period of which any record exists down to the campaigns of our own time; for he is not only made acquainted with many illustrious pioneers in the art of surgery, but is also afforded a bird's-eye view of the long series of campaigns in which the French army have participated, from the time of Henry the Second down to the Franco-German war. For example, in the sixteenth century we read of Ambrose Paré, "the father of French military surgery," discarding the use of boiling oil as an application to wounds, and introducing the ligature into practice as a means of arresting hæmorrhage; while in our own country we read of Thomas Gale, "the English Paré" and surgeon to Henry the Eighth, denouncing the surgeons of the latter's army as ignorant quacks,—scarcely to be wondered at when it is added that they received the same pay as the drummers and trumpeters.

In France, in the seventeenth century, we have Petit, to whom is ascribed the invention of the tourniquet which still bears his name, and in England Wiseman, who, by the way, is mentioned with but scant courtesy by the learned but ultra-patriotic author of the work before us. In the eighteenth century we are informed that French military surgery "shone with a brilliance even more radiant than before, and served as a model and a guide to the other military powers of Europe," while the army surgeons of England furnished but a meagre contribution to the literature of their department in the shape of Ranby's *Method of Treating Gunshot Wounds.*

If material for observation and practice had been abundant before, it was provided on a still more liberal scale during the Revolution and First Empire. Among those who flourished and did good work during this eventful period we may cite Moreau, who introduced the practice of excising joints in place of amputation; and the still more famous Larrey, who, beginning his career at the age of 13, gained his vast experience on the fields of sixty pitched battles and more than 400 combats, demonstrated his dexterity as an operator by performing 200 major amputations in one day after the battle of Moskow, and who finally was wounded twice and taken prisoner by the Prussians at Waterloo. As the outcome of the share which England took in the events of this period, important contributions to the literature of military surgery were made by Charles and John Bell, by Guthrie, Cooper, and by Hunter. After the Empire, the revolutions of 1830 and 1848 and the campaigns in Africa continued to furnish abundant surgical material, of which there took advantage, amongst others, Dupuytren, Guyon, Sédillot, Baudens, Malgaigne, Amussat, and Velpeau, whether in the capacity of army surgeons or as members of the staff of the civil hospitals in Paris.

In the history of military surgery the latter half of the nineteenth century ranks high in importance, because war was once more entered upon on the large scale, and because of the enormous increase in the killing capacity of the weapons employed.

Most of us have read of the war in the Crimea, with its terrible record of hygienic disasters in the shape of decimating epidemics of cholera, dysentery, typhus, and scurvy; surgically it is interesting, inasmuch as it was the first to furnish the opportunity of studying the effects of conical bullets, and because it was the first campaign in which chloroform was employed; let it be noted that no death was recorded as having resulted from its administration.

Finally, the Franco-German war was remarkable as being the first in which the application of antiseptic methods was attempted in military surgery, although in a crude and inefficient fashion.

The remaining portions of this classical work are beyond the range of our criticism. Suffice it to say that evidence of laborious research and of practical observation is exhibited throughout.

The text is illustrated by numerous woodcuts, executed by the author himself.

In recommending these volumes to our colleagues of the navy and army as an authoritative work on the surgery of war, we cannot but express the hope that the opportunity of testing its teachings on our fellow-countrymen may never be afforded them.

Appendicitis and Perityphilitis. By CH. TALAMON. Translated from the French by R. J. A. BERRY, M.B., C.M. Edinburgh and London: Young J. Pentland: 1893.

THIS is a translation of M. Talamon's well-known monograph, which, as the translator justly remarks, has almost become a classic.

The author, in the first place, deals with the historical and critical aspect of the subject, and among much interesting matter points out that the now somewhat generally accepted term of appendicitis should take the place of the older ones of typhilitis and perityphilitis.

M. Talamon believes in the appendix being a rudimentary remnant and considers that "its structure differs in no way from that of the large intestine." This is scarcely in accordance with the results of the most recent work on the subject, which would assign to this "essentially injurious organ" a *rôle* somewhat similar to that of the tonsil.

The anatomy is taken up in a clear and succinct manner; the lesions and their mode of production carefully described, although one cannot agree with all of M. Talamon's conclusions. After considering the causes, the writer states that "in one half of the cases the etiology is a blank."

The symptoms and prognosis of the disease are dealt with in a thoroughly scientific and practical manner, and many interesting and valuable cases are cited; while the chapter in which errors in diagnosis are ably discussed would be an important one even were it to contain nothing more than the author's strong condemnation of exploratory punctures.

The last chapter M. Talamon devotes to the important question of medical and surgical treatment. In connexion with the former some may be inclined to consider he is rather free in the recommendation of opium; as to the latter, he will probably be supported by most surgeons in this country, for he does not entertain such extreme views on the question of operative interference as those expressed by a recent American writer, who holds the "simple diagnosis of appendicitis to be sufficient excuse!" for operation.

The book is one which we can cordially recommend to our readers, and ought to find a place in the library of every medical practitioner.

The translator has done his work in a satisfactory manner, although now and again one meets with evidences of a rather too literal translation such as "miserable" applied to pulse, and "although for us" at the beginning of a sentence; nor can the term "decongestion," or the expression "alongside of," be considered elegant.

That Mr Berry possesses an extensive knowledge of the subject is shown by the footnotes which are added to the context; and we consider that he has conferred a boon on the profession at large by placing in its hands a reliable work on a disease "that about twenty out of every hundred" of people who die from other causes show traces of.

The type, paper, and publisher's work generally leave nothing to be desired.

Diseases and Injuries of the Ear. By Sir Wm. B. Dalby, F.R.C.S., M.B. Cantab., Consulting Aural Surgen to St George's Hospital. Fourth Edition. London: J. & A. Churchill: 1893.

The fourth edition of this little manual appears eight years after the last edition, and differs from it not only in matter but in form. The conversational style of lectures formerly adopted has now been departed from—wisely, we think—and the whole work has been considerably added to and revised.

The author is an aurist of wide repute and of great experience, and anything written by him on his special subject is sure to be both instructive and practically useful. At the same time, we think that the contents of his book might have been presented in a clearer and more easily assimilable form. The chapters are without headings and subdivisions, which is a distinct drawback to any one looking up a special point. Further, we doubt whether after reading Chapter IX. the reader will have derived a very clear idea of how and when to operate in mastoid disease, or what symptoms might lead him to suspect cerebral abscess. Again, we notice that almost as much space is devoted to exostoses of the meatus as to the more extensive and undoubtedly more important subject of cranial complications of ear disease. In several places we notice evidence of careless writing or hasty composition, which is hardly excusable in a fourth edition. As a result of this, the author's meaning is sometimes rather difficult to arrive at. As an example of this, we quote the following sentence from Chapter VI.:—"That if this unhealthy condition of the middle ear be allowed to exist unchecked for some time, as in the case of some other morbid processes, it may arrive at a state of quiescence, and that certain pathological products, having their seat in the tympanum, result in consequence, which products, having assumed various forms in this situation, will so act as to become impediments to the passage of sound to the labyrinth."

The book, in spite of these small defects, will be found to contain an excellent account of the subjects with which it deals, and can be safely commended to the notice of the student and practitioner.

A Treatise on Nervous and Mental Diseases, for Students and Practitioners of Medicine. By LANDON CARTER GRAY, M.D., Professor of Nervous and Mental Diseases in the New York Polyclinic. London: H. K. Lewis: 1893.

IN writing this book Dr Gray deems it necessary to devote eighty-five pages to the anatomy of the brain and nervous system, and another chapter of thirty pages to electricity. We think the first chapter could have been dispensed with, especially as he had no novel views on the anatomy of the nervous system; nor can Dr Gray claim superior accuracy or descriptive power over the ordinary text-books of anatomy, or monographs upon the brain and spinal cord. In truth, his sentences are sometimes awkward, and his terms not happily chosen. The chapter on electricity contains some useful practical information upon the use and management of galvanic and faradic batteries. In his preface Dr Gray observes that "there can be no loftier aim in medicine than the relief of human suffering," and he might add the prolongation of human life. He says: "Whether Americans are more prone to nervous diseases than other races, or whether it is that our democratic principles set a higher value upon the individual, his comfort and health, than is customary elsewhere, it is yet certain that Europeans, in investigating disease, regard the patient simply as its vehicle, whilst Americans go one step farther and deem the cure all essential." It does not, however, require either a proneness to nervous disease or democratic principles to incite European physicians to try to heal their patients, but we are well pleased to see Dr Gray lay more stress upon therapeutics than pathology. His descriptions of the different nervous diseases are good, and he is well acquainted with all the most recent researches of modern pathologists.

Some writers on medicine, in their chapters on treatment, furnish a catalogue of remedies, leaving the reader at a loss which to select. In this way drugs of very little value continue to be quoted from one book into another. Dr Gray, on the other hand, generally confines himself to telling us of the remedies which he has found useful in his own experience. Sometimes it appears to us that his list is too short. Medical practitioners rarely consult a book till they have tried the usual remedies and found them fail, and then they like to have some suggestion of a new remedy, which perhaps may be successful after the others have had a fair trial. We have a partiality for a writer like Trousseau, who shows a wide acquaintance with the resources of therapeutics, and gives us a critical comparison of the different efficacy of each drug. Nevertheless, the pages on treatment are the most valuable in Dr Gray's book. We do not know any city in the world in which there are better opportunities of studying the treatment of nervous diseases than New York, and even experienced neurologists may derive useful information from this work.

Apparently the stir about thyroid injection and feeding had not affected the minds of our colleagues across the Atlantic before Dr Gray's book appeared. His preface is dated November 1892. In his chapter on Myxœdema he makes no mention of this treatment, though it had been already tried in Europe; indeed, Schiff's transplantations of the thyroid are as old as 1890. Dr Gray recommends jaborandi and pilocarpine as exceedingly beneficial in myxœdema; and observes that "the regular removal to southern climates has caused amelioration in the symptoms. This was," Dr Gray goes on, "especially evident in the cases of Horsley's sheep and monkeys." Such expensive acts of kindness to animals on Horsley's part might soften the hearts even of the Anti-Vivisection Society. In a new edition Dr Gray will be able to announce that the prognosis of myxœdema is no longer almost invariably unfavourable.

Dr Gray tries to show that we have no means of diagnosing hyperæmia or anæmia of the brain. He affirms that he got all the members of the New York Neurological Society to agree with his views except Dr Hammond. Though these terms are somewhat lightly used by medical men, we are content to remain beside Dr Hammond unless Dr Gray can furnish us with stronger arguments than he has given us in his book. He examines one recognised symptom after another, and seeks to show that each may be deceptive; but there are very few symptoms in medicine which are not sometimes deceptive, and we often reach sound conclusions by observing two or three doubtful symptoms converging to support one another.

Dr Gray rejects the theory that epilepsy is owing to, or intimately connected with, some vasomotor change in the cerebral circulation. In spite of all he says, we are convinced that an epileptic attack is accompanied by a sudden change in the pulse; and in patients who have died of exhaustion after repeated fits, we have always found the brain and pia mater deeply congested. Dr Gray thinks that "the epileptic manifestations are probably due to a peculiar molecular condition of the motor tract, which runs from the motor convolutions to the peripheral motor structures and muscles." This does not seem to be even a probable guess, for how does it account for the loss of consciousness in the *petit mal*, or for the flushing and paling of the face which often accompany or follow the attack?

After describing various diseases of the brain Dr Gray comes to Insanity, "a specialty within a specialty," which he is willing to reclaim for the medical practitioner. He lets us know that he never commits a patient to a lunatic asylum if he or she can be treated at home. He objects to the discredit following confinement in an asylum, and believes that the state of convalescence is retarded by the constant contact with lunatics. Dr Gray only devotes about ninety pages to mental diseases. It would be easy to show that this space is too short for the medical practitioner who wishes to consult the work for information in treating his cases or for help in his perplexities. Nevertheless, it cannot be denied that the author makes the most of his space, and shows a good acquaintance with the subject. In his arrangement and treatment Dr Gray gives a preference to the views of German alienist physicians.

On the Chemistry of the Blood, and other Scientific Papers. By the late L. C. WOOLDRIDGE, M.D., D.Sc., Assistant-Physician and Co-Lecturer on Physiology at Guy's Hospital. Arranged by VICTOR HORSLEY, B.S., F.R.C.S., F.R.S., and ERNEST STARLING, M.D., M.R.C.P., with an Introduction by VICTOR HORSLEY. London: Kegan Paul, Trench, Trübner, & Co., Lim.: 1893.

IT is rarely that a dead author is so staunchly defended by his friend as is the late Dr Wooldridge by Prof. Horsley. Fortunately it is not often that such a defence is so needed. That Dr Wooldridge was unfairly treated during his lifetime there can be no doubt. The non-publication of his valuable and original Croonian Lecture by the Royal Society must remain one of the reproaches against that too conservative body. Nevertheless, it is possible that the non-acceptance of his work was not entirely due, as Prof. Horsley seems to think, to the fact "that many who are selected to act as the arbiters of the value of any fresh idea have little ability to recognise that all scientific progress lays bare some new fact which . . . . must necessarily be in opposition to preconceived notions;" but partly, at least, to a want of lucidity on the part of the author in expressing his ideas, and of connecting his conclusions with experimental data.

The publication of these collected papers is not only important as a vindication of Dr Wooldridge's position as a scientific investigator, but is justified by their intrinsic value as contributions to physiology and pathology.

The book may be divided into three parts:—

First, A lengthy Introduction of forty pages by Prof. Horsley, in which Wooldridge's wrongs are most forcibly stated, perhaps with too frequent iteration, and in which an admirable review of his researches is given.

Second, Seventeen physiological papers, the first dealing with the physiology of the nerves of the mammalian heart, demonstrating that the ventricular nerve fibres are afferent; and the others with the much-disputed question of the nature and causes of the coagulation of the blood,—the question to the solution of which he devoted the greater part of his time and energy during his too short life. The chief facts demonstrated by these researches are undoubtedly—first, the coagulation of plasma independently of corpuscles; second, the complex nature of fibrin factors and fibrinogens; third, the important part played by phosphorus-containing compounds at least allied to, and by him considered identical with, lecethin; and lastly, the interesting action of phosphorus, and, as he thought, lecethin-containing extracts from various tissues—"tissue fibrinogens"—in setting up coagulation. While never denying that coagulation may result by the action of fibrin ferment on the classical fibrinogen, as held by Hammersten, he maintained that it also is produced by the interaction between two or more fluid fibrinogens independently of a ferment.

Third, Six papers on pathological subjects, which the editors divide into three classes:—1st, Upon protection against the action of pathogenic organisms; 2nd, upon the production of hæmorrhagic infarctions; and 3rd, upon the production of dropsy in heart disease.

The great value of the first group of papers is that they are among the earliest contributions to the investigations of protective proteids. In the two latter groups the influence of tissue fibrinogens in the production of two important pathological conditions is worked out. In the light of the recent researches of Heidenhain on lymph formation and lymphagogues, his results, as regards the production of œdema, are of great interest.

A perusal of these admirable papers cannot but fill us with regret at the loss sustained by medical science in the early death of one possessed of so much genius and energy as Dr Wooldridge.

The Physiologist's Note-Book: a Summary of the Present State of Physiological Science. For the Use of Students. By ALEX. HILL, M.A., M.D., Master of Downing College, Cambridge. London: Charles Griffin & Co., Lim.: 1893.

IN spite of its title this is undoubtedly a cram-book, and though it may be the note-book of a physiologist, it is not intended for physiologists, but for students preparing for examinations. As a cram-book it is distinctly better than most of its class; for the arguments as well as the conclusions are fairly stated, and the student is not asked to accept and remember an unlimited number of statements unsupported by any rational demonstration. No pains have been spared to make the work as complete as possible, and the references show that the author has kept himself well abreast of English physiological work. Perhaps in a book for students it would have been wiser to exercise some discrimination in regard to the selection of these references.

Were such a work perfectly accurate and reliable, it would be of use to students revising their work before an examination; but the most scrupulous accuracy would not make it of use to any others. Unfortunately it is not accurate. A number of mistakes are to be found throughout the work. Perhaps the most glaring and extraordinary of these is in regard to the duration of auricular systole, as figured in the Plate opposite page 22. The diagram, representing the auricular at least twice as long as the ventricular systole, is taken from Landois and Stirling's *Physiology*, where, by the way, the same mistake has appeared in succeeding editions. As examples of the want of accuracy we may take the following, all from page 65: "Gastric juice . . . . (*when it contains mucin*) converts cane sugar to dextrose." It is the hydrochloric acid which does so. "Bile . . . . is an antiseptic." This has been disproved over and over again. "Pancreatic juice . . . . can digest nuclein and mucin." Surely some explanation of what is meant by "digest" should be given. While bile is said to emulsify fats, the pancreatic juice is not credited with this action. It is needless to multiply such examples. Those given will show that without careful revisal the work is misleading.

A Handbook of Obstetric and Gynæcological Nursing, being the Fifth Edition of a "Manual for Midwives." By the late FLEETWOOD CHURCHILL, M.D. Revised and greatly Enlarged by THOMAS MORE MADDEN, M.D., F.R.C.S. Ed. Dublin: Fannin & Co.: 1893.

THIS work is more than a resurrection of Fleetwood Churchill's *Manual for Midwives*, so well known in its day; it is practically a new book that Dr More Madden has written. We cannot wish for it anything better than to meet with the same success that attended the text-book on which it is modelled, and this, judging from the conciseness and correctness of the information contained within its boards, it may be confidently expected to attain. Both in the obstetrical and in the gynæcological part of the book there is no unnecessary detail, and little or nothing is touched upon that does not properly fall within the sphere of the midwife's practice. The information is generally well up to date; but surely the ball pessary for prolapsus uteri is now a somewhat antiquated method of treatment, and its omission would in no degree diminish the value of the book.

Syphilis: Its Treatment by Intra-muscular Injections of Soluble Mercurial Salts. By EDWARD COTTERELL, F.R.C.S. Eng. London: John Bale & Sons: 1893.

THE two soluble mercurial salts recommended for this form of treatment are the sal alembroth and the sozoiodol of mercury. A solution of the former is made "by dissolving 32 grs. of perchloride of mercury, 16 grs. of pure chloride of ammonium in distilled water, sufficient to yield 2 fluid ounces of product; the dose used is 10 minims, which is equal to $\frac{1}{3}$ gr. of sal alembroth." The amount of mercury injected during the treatment, which lasts for twelve or eighteen months, is from 8 to 10 grs. The following is the formula for sozoiodol:—

Sozoiodol of mercury, . . .	5 grs.
Iodide of sodium, ...	10 grs.
Distilled water, ...	200 min.

10 to 15 minims for an injection.

The author prefers the sozoiodol solution. He declares that it quickly clears up tertiary manifestations. This statement, no doubt, must be taken with the proverbial grain of salt. The site of the injection is the upper part of the gluteal region. At first the deep injection is given weekly, after the symptoms have disappeared once a fortnight, and later on once a month. The advantage of this method of treatment is that the administration is kept in the hands of the surgeon, and the amount of mercury given is accurately recorded. It is a safer method, barring accidents from injecting, than the ordinary free and easy way of allowing patients to drug themselves with mercury.

La Pratique Dermatologique et Syphiligraphique des Hôpitaux de Paris, aide-mémoire et formulaire. Par le Prof. PAUL LEFERT, Manuel du Médecin Praticien. Paris: Librairie J. B. Baillière et Fils: 1893.

THE end of all medicine is the cure of the patient when that is possible, alleviation in any case. The route by which various practitioners reach this goal is in many cases a different one, and it forms an interesting study to examine, analyze, and compare the plans adopted. The scheme in the volume before us is to allow each contributor to tell his own story, to place on record, in brief terms, the way in which he manages a particular ailment. The editor has obtained from eighty of the chief hospital physicians in Paris notes of the methods employed by them in dealing with cutaneous and venereal diseases. It contains more than 500 formulæ, and numerous carefully elaborated directions. Many of these are of much value. The only difficulty which may be experienced when glancing over so many recipes, is to select the one most suited for the case. The book is well got up, is handy in size, and will be found to reproduce with great clearness the views held on a number of interesting topics by the most eminent French specialists.

The Cholera Epidemic of 1892 *in the Russian Empire.* By FRANK CLEMOW, M.D. London and New York: Longmans, Green, & Co.: 1893.

IT is not often in reviewing a book that one wishes it were longer, yet Dr Clemow's account of the epidemic of cholera in Russia is so interesting that we regret that we have not more of it. It is an exceedingly good description of what took place in Russia last year, and it shows fully that the Russian Government has been quite alive to the importance of taking precautions to stay the spread of the dread disorder. If the instructions which were given by the Government have not been altogether successfully carried out, the reason is to be found more in the vast size of the empire and the difficulties which an ignorant and superstitious population has put in the way of the sanitarians than in any failure on their part to do their duty. A description of the rise and spread of the epidemic has been given, and it is worthy of note that this epidemic appears to have been more virulent than any that has affected the Russian Empire in previous years, a point of considerable importance. In these days, when the spread of cholera is believed to be solely due to water, it is interesting to note that there is evidence of its spread by fomites; and we are glad that Dr Clemow calls attention to this fact, as it is apt to be ignored at the present time—very wrongly, we think.

Our author gives an admirable review on the treatment of cholera in St Petersburg, and it appears that the symptomatic treatment rendered the greater service. When speaking of high rectal injections, which were very generally employed in all the St Petersburg hospitals, Dr Clemow mentions the fact that it was proved that, after rectal injections of a fluid containing creosote, vomiting of a fluid smelling strongly of creosote shortly followed, showing that, at any rate in some cases, the fluid passes the ileocæcal valve. What will Professor Struthers say to this?

There is a detailed description of the apparatus for boiling dejecta, and full information as to disinfection of wearing apparel, of bed-linen, of rooms or wards, etc., is given; and, lastly, we have a brief account of the Russian Conference on Cholera held in St Petersburg last December. At the present time Dr Clemow's book should be in the hands of all medical officers of health.

Guy's Hospital Reports. Edited by W. HALE WHITE, M.D., and W. H. A. JACOBSON, M.A., M.Ch. Vol. XLIX. London: J. & A. Churchill: 1893.

St Thomas's Hospital Reports. New Series. Edited by Dr J. D. ACLAND and Mr BERNARD PITTS. Vol. XXI. London: J. & A. Churchill 1893.

THESE interesting and important yearly chronicles of the two great schools, once united, now rivals, continue to keep up their high standard. *Guy's* is rather the smaller of the two, and contains fewer original articles, but some of them are of considerable length and importance. Surgeons will read with interest the long paper by Mr Howse and Dr Pitts on Excision of the Knee, and Dr Fisher's paper on those obscure sanguineous or pancreatic cysts which have lately come to the front as explaining cases hitherto misunderstood. By far the most interesting portion of the book is found in the admirable biographical sketches of John Hilton and Edward Cook by Mr Jacobson and Mr Lucas. Both of these great surgeons deserved well of their hospital, and these sketches, warm from the hearts of their authors, show that these great surgeons are not forgotten.

The St Thomas's volume begins also with a short but well written and appreciative notice of the late Mr Le Gros Clark, whose striking personality and high professional character are still well remembered, though it is twenty years since he retired from the Hospital. Among the many interesting papers in the volume, the History of Transfusion, by Mr Bernard Pitts, is probably the most noticeable.

Annual of the Universal Medical Sciences: A Yearly Report of the Progress of the General Sanitary Sciences throughout the World. Edited by CHARLES E. SAJOUS, M.D., and seventy associate Editors, assisted by over two hundred Corresponding Editors, Collaborators, and Correspondents. Illustrated with Chromolithographs, Engravings, and Maps. In 5 Volumes. Philadelphia: The F. A. Davis Company, Publishers: 1893.

HAVING exhausted the language of panegyric on previous editions of this admirable work, it may suffice now to say that the present issue maintains its high character. An enormous amount of serial and permanent literature in Medicine and the allied sciences has been laid under contribution, analysed, and arranged, so that the cream of it all is skimmed and presented to the reader in a most accessible manner. The admirable arrangement of indices make it a task of only a few minutes to discover what has been done during the year in any given branch of medicine. Quotations are furnished, contrasted with other writings on the same subject, and references are given so accurately and so simply that all trouble is spared. No man, especially no teacher, who tries to keep abreast of the progress of his subject can afford to be without this admirable work of reference.

Transactions of the Fourteenth Annual Meeting of the Laryngological Association. New York: D. Appleton & Co.: 1893.

THIS volume contains nineteen papers and discussions on various subjects connected with diseases of the throat and nose, which were presented at the annual meeting of the Association held in the city of Boston in June 1892. They give evidence of the flourishing and energetic condition of the Society, and of the excellent work being done by its members.

Transactions of the American Otological Society. Vol. V. Parts 1 and 2. New Bedford, Mass.: Published by the Society: 1892.

The papers here published form a goodly volume, and have been contributed by some of the best known aurists of the American continent. A glance at the table of contents will show that the subjects to which most space is devoted are mastoid disease, operations on the membranes and ossicles, and intra-cranial complications of ear disease. These, as well as other papers too numerous to enumerate, will be found of interest to the otologist.

The Medical Magazine. Vol. II., No. 5, November 1893. London: Southwood, Smith, & Co.

This is an excellent number of this brightly edited and interesting magazine. The papers are short, well written, and there is a refreshing absence of cases tediously described for self-glorification of the describer, which are so apt to encumber the pages of the so-called practical medical journals.

Dr Parkes Weber gives some interesting details of Charcot's teaching. Dr Alfred Harvey tells us of Obstetrics in the sixteenth century; and in the "Notes" we have a most interesting account by Dr Farebeuf[1] of a passage bearing on cerebral localization written in 1762 by Professor Joseph Baader of Frieburg-in-Bresgau.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIII.—MEETING I.

Wednesday, 1st November 1893.—Dr Joseph Bell, *President, in the Chair.*

I. Election of Office-Bearers.

The following gentlemen were elected Office-bearers for the ensuing year:—*President,* Dr Clouston; *Vice-President,* Dr John Wyllie; *Councillors,* Dr James, Dr Melville Dunlop, Dr R. W. Philip, Dr Joseph Bell, Dr Russell Wood; *Treasurer,* Dr

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[1] *Gazette hebdomadaire de Médecine et Chirurgie.*

Mackenzie Johnston, 44 Charlotte Square; *Secretaries*, Dr William Russell, 46 Albany Street, and Mr Hodsdon, 52 Melville Street; *Editor of Transactions*, Dr William Craig, 71 Bruntsfield Place.

II. Election of Member.

Robert Mackenzie, M.D., 1 Bruntsfield Terrace, was elected an Ordinary Member of the Society.

III. Exhibition of Patients.

1. *Mr Cotterill* showed a patient who had been operated on for GENU VALGUM. J. G., 35 years of age, suffered from rickets since infancy. Began to suffer from pain last year, due to prolonged standing at his work of bookbinding. Has always had plenty of food and comfortable surroundings, and there is no other such case among his relations. The condition was very aggravated, both patellæ being dislocated from the intercondyloid notch and lying outside the external condyle. The patient walked with the femora flexed through an angle of about 70° on the pelvis, and the knees crossed each other in walking. The internal condyles were very much enlarged. When the knees were put side by side with the patient lying on his back, the great toes were separated by a distance of 32 inches; and the knee-joint was only about 8 inches from a line drawn between the big toes. Double osteotomy (Macewen) was done on January 19, 1893. The bones were found extremely hard and difficult to break. There was considerable trouble with pressure sores during the after-treatment, but the patient has now entirely recovered, and can walk six or eight miles without fatigue. His appearance is now normal, and his height has been raised by the operation by about a foot and a half.

2. *Mr Caird* showed two cases exemplifying AMPUTATION OF THE LEG after the (osteo-plastic) method of Bier.

3. *Mr David Wallace* showed a female patient, 27 years of age, upon whom he had performed the double operation of ŒSOPHAGOTOMY and GASTROTOMY for the removal of a PLATE WITH FIVE TEETH. (The plate was also shown.) The patient was admitted to Ward 14 of the Royal Infirmary on 31st July 1893, and stated that seventeen hours previously the teeth had passed into the gullet. The plate was caught with a *coin catcher*, but could not be dislodged. An endeavour was made to remove it through an opening in the œsophagus made as low down in the neck as possible, but although it could be caught with dressing forceps it remained immovably fixed a little way above the cardiac opening. This endeavour having failed, Mr Wallace at once performed gastrotomy—passed his hand into the stomach, and having introduced his finger into the œsophagus, grasped the plate with a pair of dressing forceps and readily withdrew it. The stomach wound, 4 inches long, was then stitched (Czerny-Lembert), and the abdomen closed. The

whole procedure occupied two hours. The patient made an excellent recovery, and left hospital six weeks after admission. She states (November 1st, 1893) that she is in perfect health. The wounds are firmly and completely cicatrized.

4. *Professor Grainger Stewart* showed a peculiar CASE OF NERVOUS DISEASE.

5. *Dr Alexander James* showed a case of FRIEDREICH'S ATAXIA.

6. *Dr Shand* related a case where rapid healing had taken place under ice.

IV. *The President* delivered his VALEDICTORY ADDRESS, which appears at page 529 of this Journal.

Dr John Smith proposed a vote of thanks to the President for his services.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LV.—MEETING I.

Wednesday, 8th November 1893.—Prof. A. R. SIMPSON, *retiring President*, afterwards Dr A. H. FREELAND BARBOUR, *President-Elect, in the Chair*.

I. *The retiring President* read his VALEDICTORY ADDRESS, which appears at page 481 of this Journal. On the motion of *Dr Underhill* a cordial vote of thanks was given to Professor Simpson for his address.

Dr A. H. Freeland Barbour, the President-Elect, took the chair, and thanked the Fellows for the honour they had conferred upon him in electing him President.

II. *Dr R. W. Felkin* read his paper on THE ADMINISTRATION OF ORGANIC EXTRACTS, which will appear in a future number of this Journal.

Professor Simpson said the satisfactory results that had followed the treatment of myxœdema with thyroid extract had naturally given a great impulse to the idea that other organic extracts might be serviceable in the treatment of various diseases. He (Prof. Simpson) had no doubt that Dr Felkin was correct in supposing that the sexual glands had a function in the economy additional to that of producing ova in the female and seminal fluid in the male. The late Professor Laycock used to point out, for instance, the influence of disease in the ovaries in producing changes in the skin, and though it might be difficult to explain the connexion between the nutritive processes in these glands and the rest of the body, it was matter now of frequent observation that removal of the ovaries was attended with notable changes in various parts of the organism. It was not easy to see how a brain extract should have an effect in counteracting the ill results of ovarian absence, but at least the observations that Dr Felkin had made were interesting, and he hoped he would be encouraged to make further study and experiments in this direction.

Dr George Hunter remarked that the first employment of organic extracts was recorded by Dr Brown-Séquard when he experimented on himself with testicular juice, which he stated produced in the senile the feelings of rejuvenescence. He would like to ask if Dr Felkin could suggest an explanation as to how these extracts produced their therapeutic effects. Being organic, the reputed good effects of the cerebral extracts, for example, could not be due to phosphates or other mineral constituents; and it was rather difficult to understand how in the chemistry of digestion they were not either split up into inert and excrementitious substances, and so rendered valueless in tissue metabolism. Cases had been quoted of such widely differing diseases as epilepsy, cerebral irritation, and pseudo-hypertrophic paralysis, not to mention alcoholism, being, for the time being, cured; but taking into consideration some of the more recently advanced opinions regarding the pathology of the first named complaint, viz., degeneration and vacuolation of one of the layers of pyramidal cortical cells, it was difficult to understand how cure could be brought about by the means referred to. Then, again, as regards glandular organs, the inference one might draw was that in treating a hepatic disorder—biliary obstruction, for example—all that was necessary for its successful treatment was the exhibition of fresh liver extract. While therapeutic reasoning of this kind seemed to him open to the risk of eventuating in routine and rather slipshod practice, he thought the Society was much indebted to Dr Felkin for bringing under its notice such an original and suggestive paper; and that the success which had in his hands followed the treatment advocated was the best justification of its employment.

Dr Milne Murray was of opinion that the observations brought before the Society by Dr Felkin were of much interest at the present time, and he hoped Dr Felkin would continue his experiments as occasion offered. While sympathising with Dr Hunter's desire for an explanation of the chemical process which allowed the extracts to be taken into the digestive canal, and to mingle with the various secretions there without apparently impairing their efficiency, he thought we were a long way yet from such an explanation, and that it was by no means necessary for us to wait until such was forthcoming. It was sufficient to justify continued clinical experiment that we had obtained the marvellous results which have already been recorded from the use of thyroid extract in myxœdema, notwithstanding that no adequate explanation was forthcoming of how the active principle of the extract taken into the alimentary canal was able to reach and affect in the extraordinary way it did the myxœdematous tissue distributed over the body. Dr Felkin's results were most interesting, and the precautions he had taken seemed to him (Dr Murray) to exclude, as far as possible, the element of suggestion.

Dr Church thought that Dr Felkin, in his valuable paper, had not referred sufficiently to the *ferments* which in many of the organic extracts were known to be the active principles of therapeutic value. This was so in the extract of the thyroid gland, used in myxœdema. The same was true regarding the pancreatic ferment recently discovered to be of so much value in the cure of some forms of glycosuria, due to disease of the pancreas. This being so, if the brain extract was useful in the nervous diseases in which Dr Felkin had used it apparently so successfully, was its value due to any ferment, as in the other organic extracts, affecting the whole constitution of the blood, or to what was its efficacy due? There seemed to be a great future in this treatment by organic remedies.

Dr J. W. Ballantyne thought that the Fellows were indebted to Dr Felkin for laying before them such novel and extraordinary therapeutic means and results. Even at the present time, when the thyroid gland was being administered in cases of myxœdema, sporadic cretinism, and psoriasis, and the pituitary gland in acromegaly, it still betokened not a little originality and courage on the part of Dr Felkin that he had not only conceived but carried into practice the methods of treatment that he had just described. Dr Ballantyne thought that one might be pardoned if at first one felt somewhat sceptical as to the explanation of the good results of his treatment which Dr Felkin gave; it seemed very difficult to imagine how brain extract and testicular juice could act in the way indicated. At the same time, and in view of the recent extraordinary successes attending the administration of thyroids in myxœdema, it was necessary to beware lest the sceptical attitude should lead us into denying simply what we could not understand.

Dr Felkin said he was indebted to the Society for the kind way in which they had received his paper. He was glad of criticism, and his chief object in contributing the paper had been to elicit the opinion of the Fellows of the Society as to whether he were working on the right lines or not. With regard to Dr Hunter's criticism, he was much obliged for Dr Murray's answer to it, as he was afraid that at present it was impossible to state with any accuracy how the substance acted. In reply to Dr James Ritchie, he said that every precaution was taken to prevent the patients knowing what they were taking, and it was quite easy to arrange with the chemist who supplied the extracts or suppositories to refrain from labelling them with more than the instructions for use.

III. *Dr N. T. Brewis* read his NOTE OF A CASE OF VESICO-RECTAL FISTULA, which appears at page 527 of this Journal.

Dr J. W. Ballantyne was of opinion that the case recorded by Dr Brewis was an unusually interesting, and, so far as he knew, a unique one. It seemed difficult to understand in what manner the vesico-rectal fistula had formed. It may have been, as Dr Brewis suggested, that an abscess burst simultaneously into both rectum and bladder, but he was inclined to think that it was more likely that an opening occurred first into the rectum, that this insufficiently drained the abscess, either because it was not situated at the most dependent part or on account of its valvular character, and that consequently the pus burrowed in another direction and found an exit through the bladder. It was also possible that there may have been two suppurative centres, one of which opened into the rectum and the other into the bladder, and that these later became continuous with each other by the breaking down of the tissue between the two pus cavities. The extraordinary wandering of pus in the cellular tissue was well known, and Dr Ballantyne had recently read the notes of three cases by Skene in which the pus from a pelvic abscess passed upwards, burrowed under the diaphragm, and ultimately opened into a bronchus.

Professor Simpson thought Dr Brewis's case was very interesting, well recorded, and worthy of record. He had seen cases where pelvis abscesses opening both into bowel and bladder had led to the formation of fistulous tracks between. In a case he (Professor Simpson) had under his care many years ago, such a communication had been established. It differed from Dr Brewis's rare case in that the fæcal matter came into the bladder, whilst there was no passage of urine into the bowel. It healed up under the application of nitrate of silver to the vaginal roof.

ROYAL MEDICAL SOCIETY.

Professor W. T. Gairdner delivered the Inaugural Address of the 157th session of the Royal Medical Society on the evening of Friday, 20th October. The chair was occupied by Dr A. N. S. Carmichael, the Senior President, who introduced Professor Gairdner to a large and enthusiastic audience which packed the hall to overflowing.

After referring to the pleasure it gave him, as a teacher, to enjoy, and even to profit by, association with younger minds, Professor Gairdner invited the attention of his hearers to some of those personal reminiscences and suggestions which only a man advancing in years was qualified to place before the young. He alluded to changes that had taken place in medical circles in Edinburgh since 1862, in which year he was appointed to Glasgow University, particularly with reference to the Old Royal Infirmary, the Colleges, and the University. Edinburgh was to him a city of the ghosts of men who still live on in the memory of their survivors. He briefly touched upon his intercourse with a few of the "giants" of the fifties, whose friendly ghosts still haunted Edinburgh and the Old Infirmary. To those present was entrusted the future of the profession in Edinburgh, and in many parts of the globe. Eminence might, or might not, come to some of them, but character they all could not help forming either for good or bad. He advised them to work slowly and patiently, never taking an unfair advantage of a neighbour, and not aiming merely at notoriety.

Dr Carmichael moved, and *Professor Grainger Stewart* seconded, a cordial vote of thanks to the lecturer.

The following gentlemen have been elected Office-bearers for the session :—*Presidents*, Robert Hutchison, M.B., C.M. (Senior); G. L. K. Pringle, M.B., C.M. ; D. C. Bremner, M.B., C.M.; George Elder, M.B., C.M. *Secretaries*, John Orr, M.B., M.R.C S.; J. P. Stewart, M.A. *Chairman of Finance Committee*, C. C. Easterbrook, M.A., M.B., C.M. *Curator of Library*, A. M. Easterbrook, M B., C.M. *Curator of Museum*, Mr W. R. Martine. *Chairman of Public Business Committee*, R. M. Leslie, M.B., C.M. *Editor of Transactions*, T. F. Macdonald, M.B., C.M.

Oct. 27.—Dr Hutchison in the Chair.

Dr Pringle showed three pathological specimens, viz.,—(1.) A Pedunculated Fatty Tumour, removed from the thigh of a patient after having been present for ten years. (2) A Foot which had been amputated for tubercular disease of the astragalus and os calcis. (3.) A Fungating Tumour of the Mamma (encephaloid cancer).

Dr Crerar moved a vote of thanks, and emphasized the importance of members showing as many pathological specimens as possible at the meetings.

Several members took part in the discussion which followed.

Dr Hutchison showed a Puerperal Uterus with a portion of the placenta still firmly adherent to its walls. In the discussion which followed, reference was made to the rarity of obstetrical communications from members of the Society, and it was hoped that the example set by Dr Hutchison would be followed by others.

Mr Martine, Drs Giles, Macdonald, Crerar and Welsh, and Mr Briggs took part in the discussion.

Nov. 3.—Dr Pringle in the Chair.

Dr Hutchison delivered his Presidential Address. In speaking of the duties of medical men, he reminded his hearers that doctors should aim at the improvement of mankind. Instead of blindly specializing, and often piling up huge accumulations of laboratory work understood only by a very few, they should endeavour, in every way in their power, to advance the profession, by contributing to print, or reading to societies, each iota of knowledge acquired clinically. In conclusion, he recommended the formation of more medical societies with more vitality, and more medical publications of a higher standard,—a Medical Review of Reviews.

Dr Welsh gave a communication upon a case of Cancrum Oris which he had met with in his dispensary practice. He showed temperature charts, photographs, and a painting showing the condition of the affected part of the face of his patient.

Dr Elder described a patient that had come under his care suffering from the same complaint. He showed microscopical specimens from the case, and briefly described the pathology of the condition.

Drs Macdonald, Orr, and Giles took part in the discussion.

Mr Martine showed an old Half-minute Pulse-glass.

Nov. 10.—Dr Bremner in the Chair.

Dr Pringle read his Presidential Address. He dealt with the advance of Surgery in the last fifty years, and showed by comparative statistics how the mortality in various major operations had decreased. He ascribed the better results, obtained nowadays, to antiseptics (asepsis), to more highly qualified nurses, to better and more perfectly equipped hospitals.

Dr Fred. Mackay showed—(1), an Eyeball, recently enucleated, which showed a growth stretching from the optic nerve to the back of the lens; (2), a patient suffering from Double Congenital Dislocation of the Lens. On one of the eyes the operation of iridodesis had been performed with beneficial effect. A brother of the patient suffered from a similar affection.

Dr Orr and Dr Elder respectively moved and seconded a vote of thanks to Dr Mackay.

Mr D. M. Hutton read his first qualifying communication upon a case of Melanotic Sarcoma, which had been characterized by the long period of immunity from recurrence after removal.

The Society voted upon and accepted the communication.

Dr Hamilton showed an Anencephalous Fœtus with membranes of placenta attached to the scalp and dura mater, bands uniting the fingers, which showed amputation of the terminal phalanges, union of several fingers, talipes of wrist and absence of radius on left side, double talipes valgus, marked exophthalmos. He next read notes of a case of Tetanus treated in one of Professor Fraser's wards in the summer. In connexion with this case he showed microscopic specimens of the tetanus bacillus, which had been kindly lent by Professor Greenfield.

The discussion which followed dealt principally with the methods of treating tetanus, medicinal and otherwise. A large number of members took part in it, amongst whom were Mr D. M. Hutton, Dr Murray Leslie, Messrs Boase and Montserrat, and Drs Mackay and Orr.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

Cardine.—Dr W. A. Hammond recommends a preparation made from the extract of heart-muscle for hypodermic injection in cases of weakness of the heart. His theory is that all the organs of the body possess the power, when in a state of health, of removing from the blood the peculiar substance that they require for their nutrition, and that they take this substance and no other, never making a mistake in the matter. If through disease or from derangement of function they lose this power, or if the peculiar pabulum they require be not in the blood in sufficient quantity, their functions cease to be normal. He claims for his remedy that it is of great value in all cases of cardiac weakness, howsoever caused. The mode of preparation is the following:—1000 grammes of the finely minced fresh heart of the ox, previously well washed in a saturated solution of boric acid, are submitted to the action of a menstruum consisting of 1200 grammes of glycerine, 1000 grammes of a saturated solution of boric acid at a temperature of 60° F., and 800 grammes of alcohol. The mixture is made in a strong porcelain vessel, and every day for at least eight—preferably twelve—months it should be stirred, and the heart substance submitted to strong pressure. At the end of the maceration the supernatant liquid, with all the juice that can be expressed from the heart substance, is allowed to percolate through a stone filter,—a very slow process, which often requires several weeks. The resulting solution of "cardine" is a transparent straw-coloured liquid, specific gravity 1070, which should be kept in a well-stoppered bottle in a cool place. The dose for hypodermic injection is five minims, and it may be administered twice a day (*New York Med. Journ.*, vol. i., No. 16, 1893).—*The Practitioner*, Oct. 1893.

Diaphtherin.—Stabel (*Münch. Med. Woch.*, Sept. 10, 1893) has investigated the powers of diaphtherin in arresting the development of micro-organisms and in killing spores, as well as its pharmacological properties. Broth to which diaphtherin had been added was inoculated with various kinds of micro-organisms, and similar experiments were made with lysol and carbolic acid. The author concludes that diaphtherin greatly excels both these latter. Anthrax spores lost all power of growth after being in a 15 per cent. solution for three days. From a series of experiments on animals, the author concludes that even the continued use of diaphtherin in man cannot be injurious, as it could not be used in sufficient quantities to be dangerous. It is especially adapted, on account of its non-poisonous properties, for washing out hollow cavities, where at present very weak antiseptics have to be employed. It is to be preferred in 1 or 2 per cent. solution to other antiseptics where moist applications are required for a long time, as in burns, ulcers, etc. It only discolours the nails and hands when previously soaked in sublimate solution. Steel instruments must not be put into it.—*British Medical Journal*, Nov. 4, 1893.

Carbon Dioxide in Whooping-Cough.—A. Bergeon (*Lyon Medical*, June 25, 1893) calls attention to the fact that since 1887 he has treated whooping-cough successfully with rectal injections of carbon dioxide. He relates the case of his own child, three years of age, in whom the treatment gave the most satisfactory results. The author is supported by the experience of Girord, who has observed the good effect of the gas in the disease under consideration in his own case, as well as in those of his two children, a boy and a girl, seven and three years respectively. He confirms in every point the observation of Bergeon. The method of this latter investigator is as follows:—Immediately after an access of the malady, he administers, in the form of a rectal injection, about two litres of carbon dioxide, mixed with a few centigrammes only of pyridin. The child can take food after the operations, since this causes no disturbance of the digestive tract. The injections can be repeated after each access of the cough, and even at night, with intervals of four hours. The author has performed the operation in very young children, five or six times in the twenty-four hours. He affirms that the worst cases can yield to the treatment in a week at most; exceptionally does the disease enter on its second week.—*Therapeutic Gazette*, Oct. 16, 1893.

The Action of Diuretin.—Ancona (*Rivista fasc.* iii., 1893) draws attention to an action of this drug which has not been previously noticed. Although many observations have already been made on the action of the drug, it has always been given in cases of dropsy and other effusions accompanying heart disease, etc. Some believe it to act directly on the heart, others indirectly; some deny any action whatever on the viscus; some consider it a true diuretic, others think it is a cardiac or indirect diuretic. The general opinion is that it acts as a stimulant to the renal epithelium without being an irritant. In a patient of the author's, with chronic progressive spinal paralysis, there were marked disturbances of the function of micturition,—first an excitation of the stimulus to micturate, then vesical paralysis. These troubles were repeatedly overcome by diuretin, in daily doses varying from 2 to 4½ grammes. In this case it is difficult to think the remedy could have acted through the heart or the kidneys; there was no sign of such an action. The effect was simply a regulation of the stimulus to micturate. It would appear that the diuretin had an excitant action on the vesical centripetal nerves, or else a direct action on the vesical centre. The author inclines to the latter theory.—*British Medical Journal*, Nov. 11, 1893.

DIGITOXINE IN HEART DISEASE.—According to *La Médecine Moderne* for June 7, 1893, Masius has highly recommended to the Royal Academy of Medicine in Brussels the employment of digitoxine in cardiac therapeutics. The dose which he recommends is $\frac{1}{100}$ of a grain once or twice daily. Under these circumstances the ordinary effects of digitalis are obtained without the disturbance of the alimentary canal. Van Aubel states that he has found that in doses of $\frac{1}{100}$ of a grain, when injected subcutaneously, it does not produce inflammation. For hypodermic injection in man, he recommends the following:—

℞	Digitoxine, . . .	gr. $\frac{1}{3}$
	Chloroform, . . .	gtt. xxx.
	Alcohol, . . .	ʒ vj.
	Distilled water, . . .	℥ ij.

This may be used in eighty subcutaneous injections. Digitoxine when employed in this way should be absolutely pure and crystalline. The authors believe that by digitoxine we make up the greater part of the active principle of most of the digitalines of commerce. Another advantage in digitoxine is that it acts rapidly, and can be employed where the slow action of digitalis is objectionable.—*Therapeutic Gazette*, Oct. 16, 1893.

NAPHTHOLATE OF BISMUTH.—This substance is a neutral brown powder, without odour, not astringent, and insoluble in water, but decomposes in the intestine into beta-naphthol and bismuth. Nencks and Heuppe found it of value in the treatment of cholera, in the dose of 15 to 30 grains a day. Similarly they have employed the tribromophenate of bismuth in choleraic diseases. This preparation is also a yellow powder, neutral, insoluble, without odour, and insipid. It has no toxic action upon the mucous membrane of the alimentary canal. In 100 parts there are 50 parts of tribromophenate and 50 parts of oxide of bismuth The dose for adults is from 60 to 75 grains a day, which should be divided into many doses. It is thought that these two substances are singularly efficient intestinal antiseptics (*La Médecine Moderne*, June 7, 1891).—*Therapeutic Gazette*, Oct. 16, 1893.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Prickly Heat.—This affection of tropical climates has been regarded as an eczema due directly to the irritation of sweat which has been allowed to remain on the skin, or as connected in some way with miliaria crystallina. Polltzer has studied its pathology from pieces of skin removed from eight cases. He found the horny layer swollen by imbibition, a slightly œdematous rete Malpighii, containing cystically dilated sweat-ducts, and a cutis unchanged except in the papillary layer, where the bloodvessels appeared gorged. He is of opinion that these cysts, belonging to the class of retention cysts, are caused by the blocking up of the duct by cells swollen in consequence of continuous perspiration, and which are deficient in oiliness. Cells which are well impregnated with oil cannot imbibe water, and therefore will not swell up and occlude the sweat-duct when soaked in perspiration. The negro in the tropics sweats profusely, yet does not suffer from prickly heat; his skin is particularly well oiled. The Englishman in India, who takes his "couple of tubs a day," suffers frightfully from prickly heat,—perhaps because his frequent use of soap and water reduces the fat in his horny layer to a minimum. No region of the skin is so well supplied with fat as the face; despite the profuse sweating, prickly heat does not occur there. He has, in accordance with this view, recommended some who suffer from this complaint in summer to anoint the usually affected regions with fat, such as lanoline and almond oil, after their morning bath. This is merely a prophylactic measure, and if effectual may explain the habitual use of oil by the ancient Romans after their bath; but when the rash has actually appeared, then dusting powders, and the avoidance of anything likely to provoke sweating, constitutes the best treatment. He does not think that prickly heat is ever strictly papular; the cysts, if deep seated, impart the appearance of papules. With the growth and regeneration of the epidermis the cysts are slowly carried to the surface.—*Journal of Cutaneous and Genito-Urinary Diseases*, February 1893.

Hairy Nævus of the Face Removed by Electrolysis.—Dr G. H. Fox records an instance in which an extensive hairy nævus was successfully removed by electrolysis, the result reflecting great credit on the perseverance of both patient and operator, since nearly four years were occupied in the treatment. The growth involved a portion of the right cheek, including the whole of the lower eyelid, and extending as far as the right ridge of the nose. It was raised and warty, and mostly covered with strong dark hair.

The treatment consisted in passing a fine flexible steel needle connected with the negative pole of the battery, the strength being reduced by means of a rheostat to three to five milliampères, through the most superficial portion of the growth, the circuit being completed by the patient grasping a moistened electrode connected with the positive pole. This, repeated at intervals of a week or longer, reduced the growth and diminished the pigmentation, and destroyed many of the hairs. The remaining hairs were got rid of in the ordinary mode, by electrolyzing the follicles. Two untouched photographs show a most favourable change for the better.—*Journal of Cutaneous and Genito-Urinary Diseases,* May 1893.

On the Influence of Solar Rays on the Skin.—Dr Bowles has made some interesting and suggestive observations on this subject. It will, he says, be readily conceded by Alpine climbers that sun on snow burns more quickly than on rocks or in the heated valleys at a lower elevation, although one may feel the heat more in the two latter situations; it is when one reaches the snow that one adopts veils, masks, and snow-glasses. This increased power of burning appears somewhat singular when one reflects that the heat rays must be occupied in the melting of the snow and thus rendered latent. Dr Tyndall drew his attention to the fact that he was more burnt when experimenting with the electric light at the North Foreland Lighthouse, where there was no heat sufficient to produce such a result, than he had been on the Alpine snows. Evidence goes to prove that some other active principle must be at work besides heat to irritate the delicate capillaries of the skin and provoke inflammation. People may sometimes be severely burnt in boating on a river, or on a ship's deck in a dead calm; and this raises the suggestion that the sun's rays are, in some way hitherto unexplained, at times acted on by atmospheric, electric, or other causes, and brought into a condition similar to those rays which are reflected from snow. Sunlight reflected from freshly-fallen snow acts much more energetically on the skin than that reflected from older snow. In the case of a man who had made an ascent over snow, and was much sunburnt, while his face was swollen it was at the same time pitted, and each pit corresponded to a freckle. Two days later, however, the pitting had disappeared, the swelling having become uniform. Every one knows the beneficial effect of a brown veil and of brown glasses in protecting the eyes, and freckles may have a like influence. He painted his face brown, and on a brilliant day ascended the Gorner Grat at a time when there was much snow. In the evening every one who had made the ascent that day—the first fine one of the season—was smarting under the effects of sunburn except himself. Since then he has performed many experiments with grease paints used by actors for "making up." Where paint *was* there was no burning, where it was *not* there was inflammatory action more or less severe. He cites various instances where natives of tropical countries blacken themselves round the eyes to palliate the glare from the sun on freshly fallen snow. He also quotes an important letter from an Indian officer, who found that by lining his head covering and clothes with yellow, he completely protected himself from the action of heat in the way of inducing anything like sunstroke or other unpleasant effects. He remarks on the extreme brownness of the skin in those who have wintered at Davos, and suggests that the pigmentary deposit is an effort of Nature to protect the delicate nerves and vessels of the skin from further irritation.—*British Journal of Dermatology*, August 1893.

SURGICAL PERISCOPE.

By Kenneth M. Douglas, M.D., F.R.C.S. Edin.

Treatment of Cystitis.—Dr Etienne has employed injections of mercuric chloride in cystitis with good effect. In cases where the use of nitrate of silver by injection had done little or no good, rapid improvement took place after the use of the perchloride lotion, the urine becoming almost quite clear. Dr Etienne concludes that the use of strong nitrate of silver injections is detrimental, that it should be used weak at first (1 in 1000), until one can judge how it is borne.—*Annales de la Polyclinic de Toulouse*, March 1893.

Cyst of Pancreas.—Dr Giffen (Nebraska) reports the case of a woman, aged 28, suffering from abdominal tumour, with severe pain for two years, and nausea after food. The abdomen was opened, and the tumour found to be a pancreatic cyst. After evacuating three quarts of fluid, the cyst wall was shelled out down to the body of the pancreas, pulled out and attached by suture to the abdominal wall, as much as possible being cut off, and the rest packed with iodoform gauze. The patient did well; there was slight suppuration, but the wound healed rapidly, except where the cyst wall was attached, where a fistula remained a few weeks.—*Medical News*, June 10, 1893.

Operation for Hernia in Children.—Dr Coley (New York), from an experience of 2174 hernia cases treated during two years at the Hospital for Ruptured and Cripple, believes that while most cases are cured without operation, yet that in certain cases it is right to operate. Few cases other than strangulated require operation under the age of four. Indications for operation, to the number of five, are mentioned, viz.,—adherent omentum; cases complicated with reducible hydrocele; irreducible and strangulated cases; cases unable to obtain care necessary for mechanical treatment; and cases in which such treatment faithfully tried has failed. He records forty-six cases of operation, less than 1 per cent. of the entire number treated, of which forty-two were non-strangulated, with no deaths; and four strangulated, with a mortality of one,—a baby eight weeks old. Dr Coley advocates the method of Bassini as yielding the most permanent and brilliant results. He employs kangaroo tendon sutures, and discards silk as likely to cause suppuration and delayed healing. The choice of a suitable substance for suture he regards as of vital importance. Primary union is in his view essential to success, as also in the employment of a material for suture which will remain unabsorbed for a period of three months or more, when the parts will be agglutinated. He believes clinical experience to refute the opinion that it is immaterial whether or not the suture is absorbed after ten or fourteen days, seeing that the closure of the inguinal canal depends chiefly on union between Poupart's ligament and the conjoined tendon, which has not been shown to occur within the short period of ten days. Dr Coley employs no drain, and secures an antiseptic dressing under a plaster-of-Paris case reaching from foot to umbilicus, so that rest and primary union may be attained. In eight days the dressing is changed. In 44 of his cases primary union was obtained, in two suppuration following the use of silk instead of animal suture. The cases having been operated upon during the past eighteen months, the permanency of the cures cannot be estimated yet. Two relapses have occurred,—one after a Czerny operation, the other a Bassini, both being early cases in which silk suture had been employed and technique had been faulty.—*Ibid.*, July 1, 1893.

By CHARLES W. CATHCART, M.B., F.R.C.S. Eng.

RELATION OF SITE AND METHOD OF AMPUTATION IN THE LOWER LIMB TO THE AFTER CONDITION OF THE STUMP.—At the Pan-American Medical Congress, held in September of this year, Dr Stephen Smith read a paper on the above subject before the Section on Military Surgery. In the American war he had been in charge of a hospital to which large numbers of soldiers were sent to be fitted with artificial limbs. Careful measurements were made of the stumps when they were ready to be fitted with an artificial limb, and their condition was contrasted with that of the corresponding part of the sound limb. The results stated in general terms showed:—"(1.) In the thigh, the farther amputation is performed from the trunk the greater will be the atrophy of the entire stump. (2.) In the leg, the farther amputation is performed from the trunk the greater will be the atrophy of the extremity of the stump, and the less the atrophy of the body of the stump." As regards method of amputation, Dr Smith's figures bring out "that the skin flaps and circular of the muscles give the least atrophy in the leg as well as in the thigh." He accounts for this, in the thigh at least, by greater length of the main blood-vessels left by the circular method. He does not, however, mention the relative number of cases of each kind of amputation, nor relate any details regarding the cases. Dr Stephen Smith's last line of inquiry is of much practical value in the light of sweeping statements made by some artificial limb makers as to the necessity for a surgeon's making room for some patent form of artificial ankle. After examining into the "comparative value of stumps in amputation in the lower third of the leg and at the ankle-joint," he shows that—(1.) The stumps left after ankle-joint (Syme's) and leg amputations are far more serviceable for unassisted locomotion than those resulting from leg amputation. (2.) An artificial limb can be far more usefully applied to an ankle-joint than to a leg stump. These differences are, of course, mainly due to the heel-pad and section through cancellous tissues, which give such weight-bearing power to a Syme's amputation. Leg amputations will now, however, gain much in this respect when Biër's plan of turning up the lower end of the bones by an osteoplastic operation is applied to them.—*Medical News*, Sept. 9, 1893.

Partial Amputations of the Foot.—An important paper on this subject was read by Dr Thomas H. Manly at the 44th Annual Meeting of the American Medical Association. The author strongly advocates the principle of "least sacrifice of parts" in foot amputations, and brings forward thirteen cases which have come under his observation in support of his view. Eleven of the cases were treated by himself. He finds that Chopart's and Hey's amputations give most useful stumps, but prefers to do without any set amputation when he can get skin to cover in raw surface, and so leave more bone. His practice in cases of crush of the foot is to wrap the injured part in antiseptic dressings, after having cleansed it, and to wait to see how much is going to live before planning his plastic rather than amputative operations. He does not indicate the nature of the apparatus which he employs, but it will no doubt be similar to what others have found useful in such cases,—*i.e.*, an ordinary boot with a low heel and stiff sole, and furnished with cork or padding to represent the parts of the foot which has been lost.—*The Journal of the American Medical Association*, Aug. 19, 1893.

OCCASIONAL PERISCOPE OF OPHTHALMOLOGY.

By William George Sym, M.D.

Eye Symptoms in Diabetes, by Professor L. Mauthner.—In the *Internationale Klinische Rundschau*, Professor L. Mauthner gives his experience of eye symptoms occurring in diabetic patients, the paper being one which has its importance for the general practitioner as well as for the specialist.

While residing at Karlsbad, Mauthner had the opportunity of examining a large number of sufferers from diabetes who were also staying at this health resort, and is of opinion that lesions of the eye attributable to this disease are not by any means so frequent as has been supposed to be the case. Among the diabetics over 50 years of age he found a few instances of striæ in the lens, but these were to be regarded rather as senile changes than as due to constitutional disease. He does not think that it is the presence of sugar in the interior of the eye which leads to disease of that organ—in particular, to cataract; it is only in a very small percentage that cataract is the result of loss of fluids. On the other hand, a general disturbance of nutrition is induced which causes fragility of the vessel walls and consequent hæmorrhages. These hæmorrhages may (for present purposes) be divided into two groups, viz., intra-orbital and intra-cranial. To the first class belong hæmorrhages into or under the conjunctiva, retina, choroid, vitreous humour, and optic nerve, as well as hæmorrhagic glaucoma. To the second belong hæmorrhages into the radiations or the nuclei of the optic, motor, or sensory nerves, producing hemianopsia, homonymous defects of the field of vision, colour blindness, paralysis of accommodation, paralysis of third, fourth, sixth and facial nerves, and neuro-paralytic keratitis. The percentage of these hæmorrhages in diabetes is small, it is true; but it is of great importance to recognise the fact that the severity of the case affords no indication of the condition of the vessel walls. The significance of such diabetic symptoms lies, according to Mauthner, neither in the large amount nor, indeed, in the presence of sugar in the urine, but in the formation of the "toxines." At any epoch in a given case these may be produced in such quantity that, while they do not prejudice the nutritive capabilities of the blood as a whole, yet by deposition in some organ or other they produce therein local inflammatory processes, and to this condition the visual organs seem to possess a peculiar liability. It seems almost to follow from this that Mauthner is not in favour of a very strict anti-diabetic diet for his patients; he permits moderate quantities of carbohydrates to be taken, and in no case does he allow "carbohydrate hunger" to exist. The formation of diabetes-toxines in small quantities is much less dangerous than the presence of albumin-toxines. The diabetic marasmus which may develop with such rapidity acts on sight in two directions,—on the lens, and on the accommodation apparatus.

The true diabetic cataract, which is characterized by its rapid development, not merely in young, but even in elderly patients, belongs to the advanced stages of diabetes, and is either produced simply by the loss of fluid or forms a local manifestation of a general disorder of nutrition, which latter also, but only in severe cases, produces weakness of accommodation and insufficiency of the internal recti [? rather, of convergence.—*Tr.*]. The case of total paralysis of accommodation (cycloplegia) is quite different, for this is brought about by a hæmorrhage in the accommodation nucleus. The diabetes which results from an injury to the central nervous system does not directly affect visual organs, but the accompanying cerebral condition may induce visual symptoms directly. In this manner the centres and conducting fibres of the optic system may be attacked, and hemianopsia, unilateral blindness with defect in the temporal field of the other eye, or complete bilateral blindness arise. Thus also there may be found paralysis of eye muscles, whether cortical, nuclear, or fascicular, from implication of the various parts concerned. In a similar way, the injury to an area in the brain may produce by indirect influence (*Fernwirkung*) neuritis, neuro-retinitis, or papillitis, as it can lead to diabetes, and this to eye affections not directly connected with the injury; all those eye affections which in cerebral diabetes are produced directly by the cerebral lesion can also arise, as secondary manifestations of constitutional diabetes.

In regard to Diabetic Amblyopia, Mauthner's experience leads him to conclude that such a diagnosis can only be established when toxic amblyopia can be absolutely excluded; and since intoxication amblyopia may be brought about by the debilitating influence of the presence of diabetes, the use of tobacco, as well as of even such wines as are not sweet, should be kept well regulated. What appears, then, at first sight to be a diabetic amblyopia is not in every case to be regarded as a sign of rapidly approaching death. The majority of such cases are, he believes, really toxic amblyopia; he says he has discovered not a single published case in which it is definitely stated that the patient was an abstainer from tobacco and alcohol. Out of five cases which saw, two were cured, not by anti-diabetic diet, but by abstinence from tobacco; in one case cure followed although the diabetic condition was at the same time getting worse; in one case the amblyopia was cured by abstinence, was not produced again when the patient passed through a period of exacerbation of his diabetic symptoms, but reappeared when, these symptoms having completely passed off, the patient again began to "indulge."

Part Fifth.

MEDICAL NEWS.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH, AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The Quarterly Examinations in Edinburgh for the Triple Qualification took place in October and November, with the following results:—

First Examination.—Under the entire Examination system.—Of 34 Candidates, the following 18 passed:—Alfred Branson, Rotherham; Percy Brooke Unwin, Wigan; Esther Molyneux Stuart, London; Hugh O'Donohoe, Queen's County; Margaret Georgina Todd, Kilrenny; William Bell, Birkenhead; George Archibald Innes Mackay, Australia; William Richard Evans, Wales; Joseph Henry Ensor Trout, Birmingham; Rose Govindu Rajulu, Madras; Charles Scott Wilkinson, Shaftesbury; Ernest Blair, South Shields; Jacob Henry Abrahams, Jamaica; Octavius Hall, Madras; Alfred Jebb Nevett, Shrewsbury; Herbert Trouncer Wright, Shrewsbury; John Shand, Morayshire; and George Smith Collet, India. *Five Years' Course.*—Of 8 Candidates, the following 5 passed:—Eugene Ryan, County Cork; Thomas John Walsh, Kilkenny; Richard Nason Woodley, County Cork; George Herbert Arthur Taylor, Ayrshire; and Augustus John Laurie, Allahabad. 3 Candidates entered for the respective divisions and passed.

Second Examination.—Of 76 Candidates the following 31 passed:—William James Reid, India; Marshall Hall, Southport; Margaret Georgina Todd, Kilrenny; Rowland William Devey, Sussex; Stanley Bertram Siddall, Liverpool; Joseph Ingram, County Down; Sydney Octavius Hall, India; Richard Wolfendale, Tutbury; William Bell, Birkenhead; Charles William Laver, Melbourne; James Alfred Meeke, County Armagh; Peter Arthur Winckler, India; Frederick Augustus Routch, Buenos Ayres; John Berkeley Stewart, County Londonderry; John Michael Murphy, County Kerry; Charles George Colin Scudamore, Surrey; Arthur Palmer Chapman, London; Joseph Henry Ensor Trout, Birmingham; James Johnston, County Derry; Robert Keith Imeary, Durham; Alexander Duncan, County Derry; Frederick Jeeves, Belfast; Samuel Fletcher Blakely, West Indies; William Joseph Collins, Clonmel; George Thomas Humphrey De Clive-Lowe, Bangalore; George Bryce, Whitburn; John O'Sullivan, County Cork; John Wilson Shiels, San Francisco; Annie Gillespie, Newry; Hugh Munro MacLeod Mackenzie, Cumberland; and James Gallie, Queenstown. Of 24 Candidates who entered for the respective divisions, 12 passed.

Final Examination.—Of 149 Candidates, the following 76 passed and were admitted L.R.C.P.E., L.R.C.S.E., L.F.P. & S.G.:—Samuel Wilson, Hanley; Charles Albert Foyl, Liverpool; Patrick Twomey, Drumcollogher; Joseph Ryland Whitaker, Lancashire; John English, Armagh; John Alfred Swainson, Harrogate; William Daunt, Dublin; Thomas David Stuart Shaw, Herts; Kennedy M'Elpatrick, Derry; Alexander M'Afee, County Antrim; Florence Ulick O'Sullivan, Killarney; James Joseph Gray, Dublin; Lucius Watson Harvey, County Cork; William Mortimer Sheen, Gravesend; Charles George Colin Scudamore, Clapham; Frank Isherwood, Darwen; Robert Strickland Hannay Fuhr, Belfast; John Ewing, County Antrim; Winifred Agneta Westlake, Chippenham; George Walter Brubyn, Cornwall; Charles Dolman, Devon; Harold Thomas Hollings, Farsley, Leeds; William Morris Keal, Oakham; Sophia Chamney, Dublin; Godfrey Grendon Roe, Mayo; Leonard Bostock, Haslington; John Frederic William Ward, India; Alice Helen Anne Boyle, Dublin; John Ignatius Twohig, County Cork; William Candlish, Alnwick; Francis Albert Hadden, India; Talaat Mansour, Cairo; John Wallace, County Antrim; Herbert Melvill Green, Worthing; Alfred George M'Kenna, Loughrea; Alexander Whyte Mason, Glasgow; Louis Joseph Frederic Dombreu, Mauritius; Edward Reay Coffey, County Cork; Arthur Palmer Chapman, London; Dudley Alonzo Greaves, Barbados; Samuel Percival Smith, Swindon; James Joseph Fanning, Roscrea; Michael M'Gann, County Clare; Gerald Moore, Newcastle West; Walter Henry Ormonde Garde, County Cork; Alfred Peter Ross, Windsor; Joseph Henry Collier, Demerara; James Pirie, Aberdeenshire; Wilfrid Lawson, Hull; James Percy Milne, Calcutta; Effield Lucy Greene, Newport, Monmouthshire; Hugh Fawsit Ealand, London; William Patrick Dunsmore, Devonport; Charles Peddie, Dufftown; James Waddell, Airdrie; Michael Donovan, County Cork; Samuel Lee Potter, Oldham; William Thomas, Llangefni; Daniel John Buckley, Mallow; Archibald Houghton Brown, London; Penry Foster James, Glamorganshire; George Henry Lodge, Rotherham; Archibald Francklin Hepworth, Dover; Arthur James Neill, Melbourne; Susan Campbell, Greenock; John M'Michael Sloan, Huron County; Percy Denton Fethers, Victoria; Charles Edward Gooderson Bateman, Norwich; Peter Russell Cairns, Galashiels; Henry Laurence M'Culloch, Victoria; Alistair Robertson, Dunkeld; Richard George Jayetileke, Ceylon; William Yeates, County Down; John Tait, Moffat; Lawrence Bowman, New Zealand; and Percy William Griffiths, Merthyr Tydfil. Of 28 Candidates who entered for the respective divisions, 19 passed.

The following Candidates, having passed the requisite Examinations held in October, received the Diploma in Public Health of the three Corporations:—Alaric George Robertson, M.B., C.M., Edinburgh; David Gair Braidwood, M.B., C.M., Edinburgh; and William Arthur Winter, M.B., B.Ch., Dublin.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following Candidates, having passed the requisite Examination on 21st July 1893, were elected Fellows of the College at a meeting held on 18th October 1893:—William Andrew Betts, L.R.C.S.E., Liverpool; Frank Winson Ramsay, M.D., L.R.C.S.E., Bournemouth; Henry Bertram Rygate, M.R.C.S. Eng., Newcastle-on-Tyne; Thomas Herbert Littlejohn, M.B., C.M. Edin., Edinburgh; Charles Arthur Sturrock, M.B., C.M. Edin., Edinburgh; Maxwell Ogilvy Ramsay, L.R.C.S.E., Thornhill, Dumfriesshire; and George Ernest Clemons, M.B., C.M. Edin., Edinburgh. Surgeon-Colonel Charles M'Donagh Cuffe, C.B., L.R.C.S.E., Belfast, was elected a Fellow of the College *without examination.*

The following Candidates, having passed the requisite Examination, were admitted Licentiates of the College in October 1893:—Thomas Bedford Richardson and Albert Henry Nichol, Canada.

THE WILLIAM F. JENKS MEMORIAL PRIZE.—The Third Triennial Prize of Five Hundred Dollars, under the Deed of Trust of Mrs William F. Jenks, will be awarded to the author of the best essay on *Infant Mortality During Labour, and its Prevention.* The prize is open for competition to the whole world, but the essay must be the production of a single person. The essay, which must be written in the English language, or, if in a foreign language, accompanied by an English translation, should be sent to the College of Physicians of Philadelphia, Pennsylvania, U.S.A., before January 1, 1895, addressed to HORACE Y. EVANS, M.D., Chairman of the William

F. Jenks Prize Committee. Each essay must be typewritten, distinguished by a motto, and accompanied by a sealed envelope bearing the same motto, and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay. The Committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year. The Committee reserves the right not to make an award if no essay submitted is considered worthy of the prize.—JAMES V. INGHAM, *Secretary of the Trustees.*

DEMOGRAPHY.—Mr Joseph Kórösi, Director of the Statistical Office of the city of Budapest, has founded a Prize of 1500 francs, to be adjudged to the best work over the problem and progress of Demography. The work must decide the scientific problem of demography, and give a critical handling of existing opinions relative to the same, as well as tender all those weighty demographic involutions which have been published within the last fifty years in the different capitals of Europe and of the United States of America. The author must accordingly give marked attention to the analysis of the census, the statistics of birth and mortality, and at the same time take notice where, when, and by what persons these branches of demography have found furtherance. The works sent in can be prepared in the German, English, French, or Italian languages, and are to be sent anonymously to Mr Kórösi (Budapest) before the 1st of March 1894. The name of the author is to be enclosed in a sealed envelope.

DATE OF THE INTERNATIONAL MEDICAL CONGRESS AT ROME.—The Secretary of the National Committee for Scotland has received the following communication from the General Secretary to the Congress:—

"ROME, *November 16th*, 1893.

"My dear Sir and esteemed Colleague,—I have the honour to inform you that the Executive Committee, in its session of the 12th inst., has established that the Eleventh International Medical Congress, which had been postponed by deliberation of the 2nd August 1893 until April 1894, shall take place in Rome from the 29th March until the 5th April 1894. The Committee is very glad to have been able to satisfy thus the wish of the majority of those foreign colleagues who had been requested to give their opinion on this purpose Having thus had the pleasure to give you officially this information, I beg your leave to request you to render it public in the manner which you will judge best for the interest of the meeting, and to ascertain in the meanwhile the colleagues of your country that, in consequence of the steps taken by the Committee, for each of them convenient accommodation at usual prices will be provided for. The circumstances beyond our control, which had forced us to postpone the meeting, existing no more, the organising action for the Congress enters on a period of renewed activity, and the Organising Committee flatters itself to find you, my dear Sir, as well as the colleagues of your country, its zealous collaborators, now and in the future, as you had been, with so much success, for the past.—Yours faithfully. G. BACCELLI, *President;* E. MARAGLIANO, *General Secretary.*"

INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.—The next International Congress of Hygiene and Demography will be held at Budapest in September 1894, under the patronage of His Imperial and Royal Majesty the Emperor of Austria. The Chief Secretary is Professor C. Müller, M.D. At the instigation of the London Congress, a separate section for Tropical Countries is being organized, and Dr Isambard Owen and S. Digby, Esq., are acting as Secretaries.

MESSRS BURROUGHS, WELLCOME, & CO. have sent us a most beautiful set of Pictures as a memento of the World's Columbian Exposition at Chicago. The pictures, fifteen in number, are works of art, and give an admirable representation of the gigantic Show. We have also received from the same firm a specimen of a small combined Match Box and Throat Lamp designed by H. W. Denton Cardew, Esq., M.R.C.S. This little instrument is found very convenient by the general practitioner for illuminating the throat, nose, ear, or vagina. The light is well reflected through an ordinary speculum. The metal will retain its white colour, and is made of a special amalgam, which is easily burnished by rubbing with a wash-leather or handkerchief. The little candlestick will hold a wax match firmly, while the physician can easily manipulate and hold it in any desired position. We have also received from them a very simple and effective patented Syringe, made in glass and aluminium, with steel needles and an aseptic packing. The simplicity of its manufacture renders it easily taken down and made aseptic. It is very light, and the aluminium sheath is incorrodible.

THE President of the Plymouth Institution and Devon and Cornwall Natural History Society (Dr W. H. Pearse) has sent us his Address at the opening of the session 1892-93. He deals in a learned and interesting manner with the present position of biology. He adopts the historic method, and also states his belief that "physical and biological science should not be divorced from the study of method and philosophy; a false method and philosophy may quench in darkness the most light-giving and ennobling truths and facts of Nature; whilst, on the other hand, one fact seen in true method lights up every side of Nature. Great as has been our advance during this century, I believe that we are but in the dawn of great truths and generalizations. And advances made in biology shall not only give us light in pathology, but will react on all the mental and spiritual capabilities of man; the highest method—spiritual and mental—will not be, as in the past, an area of conflict, but of ever-expanding harmony." We quite agree with Dr Pearse.

Dr C. Eijkman of Batavia has been carrying out an extensive series of observations on Metabolism in the inhabitants of the tropics. The results he has obtained are published in Virchow's *Archiv* (133 Band, 1893). A detailed analysis of the food, fæces, and urine is given. The author believes that there is no regular diminution in the production of heat in Europeans in the tropics who are performing light work. The same holds probably if more severe work is performed. Nor is there a reflex chemical regulation of heat, at anyrate not in the measure in which it is found in some varieties of animals. In these, according to Rubner, for a rise of 1 degree in temperature the production of heat falls about 2–3 per cent. A man is compelled to limit indirectly the production of heat by diminished muscular work, or by abstinence from excess in food. The need for artificial cooling is hardly less in the acclimatised European than in the new-comer. Both differ from the natives, although the difference be only relative. Probably the greatest difference consists in the fact that in hot climates the physical regulation of heat is less powerful in whites than in the coloured races. This explains why the European in India can have less bodily exertion than the native, especially that he cannot bear exposure to direct sun ray. His organism reacts very soon by a rise in the body temperature, which expresses an alteration in the balance of heat production, and may (by heat shock) endanger life. It is seen from the author's experiments, however, that the amount of water vapour given off by Europeans in the tropics by perspiration, urine, and fæces, is only about the same as the average ascertained by Pettenkoper and Voil. The lungs do not give off heat in the tropics. Europeans eliminate by the urine 13 grammes nitrogen in the twenty-four hours, the natives 8 grammes.

We have received the first number of a new American magazine, the *Dominion Medical Monthly*. The principal paper in the first number is one by Dr Howitt on Appendicitis, which is illustrated by six cases.

In an article on the Teaching of Medical Jurisprudence in the *Medical Magazine* for September there are a few sentences which may be quoted with advantage, and we wish that the suggestion they contain might be adopted. "It is desirable that medical students should make a point of attending some of the trials involving medico-legal questions. . . . The study of legal procedure, the methods of cross-examination employed by counsel would prove invaluable. . . . Some arrangement might be made to insure a certain number of medical men being accommodated to follow the proceedings in comfort."

THE editor of the *Chikitsa-Sammilani, Pundit Avinash Chandra Kavritana* is publishing an English translation of the oldest and most celebrated Hindoo treatise on Medicine. It is being published in parts at the price of one rupee each, and as the work is to the Medicine of the East as the Aphorisms of Hippocrates is to the Medicine of the West, it will be of interest.—*Medical News.*

DR J. MIJANITZIN believes that after extensive burns a ptomaine not present in the healthy organism is found in the blood, organs, and urine. It probably belongs to the same group as muscarin, neurin, and peptotoxin. Its antidote is atropine.—*Virchow's Archiv,* Band 737, Heft iii.

WE notice in the *British Medical Journal* for September 6 a leaderette on Unqualified Medical Missionaries, in which the assumption of the term medical missionaries by unqualified men and women is strongly deprecated, and rightly so; and we are glad to see that, as reported in the June number of the *Indian Medical Record,* the medical missionaries present at the Decennial Missionary Conference in Bombay strongly expressed the opinion that every medical mission should be thoroughly equipped professionally, and also that men and women sent to India as missionaries should invariably have a legal qualification, and that none others should be placed in charge of medical mission work. We hope that the various missionary societies will take this matter to heart, as it is one of no little importance.

M. HAFFKINE appears to be working very hard in India. At Patiala he inoculated 2600 persons in six days, at Simla over 1000, at Delhi 880. No bad symptoms have followed vaccination in any case, save that at Simla in a few instances there was much febrile disturbance, the temperature rising to 104° in two cases after inoculation.—*Indian Medical Record.*

THE income of a lady doctor in India last year amounted to over £4000. She had one present of over £500.—*Indian Medical Record,* July 16.

OBITUARY.

THE LATE SIR ANDREW CLARK, BART.

IT is with feelings of the deepest regret that we have to chronicle the death of Sir Andrew Clark, which took place in London on 6th November.

A native of Aberdeen, educated at the Universities of Aberdeen and Edinburgh, Sir Andrew Clark entered the Medical Service of the Navy in 1846, but about eight years afterwards severed his connexion with the service and settled in London. Holding at first the post of Curator of the Museum of the London Hospital for a few months, he was elected in 1854 Assistant-Physician, and twelve years later he became Physician to the Hospital. It was characteristic of him that, in spite of the strain they caused him, he performed the duties of this office for the full term of twenty years, and even when he retired from the active service of the hospital he continued to give, year by year, clinical lectures as Emeritus-Professor of Clinical Medicine.

As a physician Sir Andrew Clark was remarkable for a profound clinical insight into the nature and bearings of disease, and for a complete mastery over every detail of treatment. As a teacher his methods were those of close personal observation, not only of the phenomena of disease, but also of the individuality of the patient, and upon this foundation he based a lucid exposition of the outstanding features of every case and of the means by which the disease might be guided to a satisfactory termination. His enthusiasm in clinical investigation was contagious, and from the beginning of his connexion with the London Hospital down to the date of the last clinical lecture which he delivered, his example and counsel acted as powerful stimulants to exertion. As an original worker, Sir Andrew Clark has not left behind him nearly so large a contribution to medical literature as many another man less occupied with private and public duties, yet much of his work is of permanent value. His discovery of the diagnostic significance of elastic tissue in expectoration while in the Medical Service of the Navy, and his later researches into fibroid phthisis, were alone sufficient to stamp his work with the mark of originality. He was, like our late Professor of Medicine in Edinburgh, skilful in coining phrases, and it is probable that terms like "renal inadequacy," and epithets such as "physiological iniquity," will be long retained amongst us. There can be no doubt that he had a wonderful faculty, somewhat akin to that of our lately-lost Poet-Laureate, for gathering together and giving expression to the tendencies of the age; the fact, however, cannot be overlooked that he was also largely instrumental in shaping and directing the currents of modern thought.

Sir Andrew Clark was undoubtedly a great personality. As a speaker he was fluent and perspicuous; as a conversationalist he was at once brilliant and profound. In the conduct of affairs few men of the time have shown so much breadth of view and knowledge of detail, and certainly no one was able to bring to difficult negotiations such consummate tact. His well stored mind and unvarying courtesy made him much sought after by all classes, and to all, as much as lay in his power, he was freely accessible. To the young he was a never-tiring friend and adviser, and he was further most generous in granting every kind of assistance. With a deeply-rooted love for all that is artistic and literary, and a quite Scottish passion for metaphysical and theological discussion, it is small wonder that he was admired by workers in multifarious fields of activity.

No notice of the deceased physician would be complete without some reference to his connexion with the Royal College of Physicians. Sir Andrew Clark became a Fellow in 1858. As Lumleian and Croonian Lecturer, Examiner, Councillor, and Censor, he received most of the honours which the College had it in its power to confer, and in 1888 he was elevated to the highest position in the medical profession by his election as President.

He took a keen interest in the medical societies of the Metropolis, and was President successively of the Pathological, Clinical, and Royal Medical and Chirurgical Societies.

The late President had many honours showered upon him. He was a Fellow of the Royal Society; a Doctor of Laws of the Universities of Aberdeen, Edinburgh, and Cambridge; and a Doctor of Medicine of Trinity College, Dublin; and in 1883 Her Majesty, acting on the advice of Mr Gladstone (long one of his most intimate friends), granted him the dignity of a Baronetcy.

Sir Andrew Clark died, as he had lived, in harness, and probably, as one of the most staunch exponents of the "gospel of work," he has been called away as he would have wished. We all feel that the world has lost a great man, and is the poorer by his death.

PUBLICATIONS RECEIVED.

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Dr A. Chipault,—Études de Chirurgie médullaire. Félix Alcan, Paris, 1894.

J. Jackson Clarke, M.B. Lond., F.R.C.S.,—Cancer, Sarcoma, and other Morbid Growths considered in relation to the Sporozoa. Baillière, Tindall, & Cox, London, 1893.

Andrew Davidson, M.D., F.R.C.P. Ed.,—Hygiene and Diseases of Warm Climates. Young J. Pentland, Edin. and Lond., 1893.

Prof. Josef Gruber,—A Text-Book of the Diseases of the Ear. Translated from the Second German Edition and Edited by Edward Law, M.D., etc., and Coleman Jewell, M.B. Lond. H. K. Lewis, Lond., 1893.

Charles E. Jennings, M.D., etc.,—Cancer and its Complications. Baillière, Tindall, & Cox, London, 1893.

Ladies at Work. Papers on Paid Employments for Ladies, by Experts in the several Branches; with an Introduction by Lady Jeune. A. D. Innes & Co., Lond., 1893.

Prof. E. Loumeau,—Chirurgie des Voies Urinaires, 2nd Edition. Feret & Fils, Bordeaux, 1894.

William Macewen, M.D.,—Atlas of Head Sections. James Maclehose & Sons, Glasgow, 1893.

William Macewen, M.D.,—Pyogenic Infective Diseases of the Brain and Spinal Cord. James Maclehose & Sons, Glasgow, 1893.

Edward Martin, A.M., M.D.,—Essentials of Minor Surgery, Bandaging, and Venereal Diseases. W. B. Saunders, Philadelphia, 1893.

Prof. A. Marvaud,—Les Maladies du Soldat. Félix Alcan, Paris, 1894.

Captain M. P. Nadieïne,—New System of Sanitary Drainage. Whittaker & Co., London, 1893.

Prof. C. A. Pekelharing and C. Winkler,—Beri-Beri: Researches concerning its Nature and Cause and the Means of its Arrest. Translated by James Cantlie, M.A., M.B. Young J. Pentland, Edin. and Lond., 1893.

Report of Board appointed to inquire into the Prevalence and Prevention of Lead Poisoning at the Broken Hill Silver-Lead Mines to the Hon. the Minister for Mines and Agriculture, New South Wales. Sydney, 1893.

Charles E. Sajous, M.D.,—Annual of the Universal Medical Sciences, Vols. 1 to 5. F. A. Davis Co., Philadelphia, 1893.

Sydney Stephenson, M.B., F.R.C.S. Ed.,—Ophthalmic Nursing. The Scientific Press, Limited, London, 1893.

J. Bland Sutton,—Tumours, Innocent and Malignant: Their Clinical Features and Appropriate Treatment. Cassell & Co., Limited, London, 1893.

Transactions of the Clinical Society of London. Vol. 26. Longmans, Green, & Co., London, 1893.

Twenty-first Annual Report of the Local Government Board, 1891-92. Supplement: Enteric Fever in the Tees Valley. 1893.

Dr Vialet,—Les Centres Cérébraux de la Vision. Félix Alcan, Paris, 1893.

A. J. Wall, M.D. Lond.,—Asiatic Cholera: Its History, Pathology, and Modern Treatment. H. K. Lewis, London, 1893.

Percy Wilde, M.D.,—Rheumatism: Some Investigations respecting its Cause, Prevention, and Cure. John Bale & Sons, London, 1893.

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